US Army Corps of Engineers®

U.S. Army Corps of Engineers, Kansas City District

CONTRACT NOs. W912DQ-06-D-0006 and W912DQ-08-D-0017

CORNELL-DUBILIER ELECTRONICS SUPERFUND SITE SOUTH PLAINFIELD, NEW JERSEY

FINAL SITE-WIDE SITE SAFETY AND HEALTH PLAN FOR ALL OPERABLE UNITS (OU-1 THROUGH OU-4)

October 2008

124196

Prepared By:

Malcolm Pirnie, Inc.

MALCOLM PIRNIE

R2-0000001

CORNELL-DUBILIER ELECTRONICS SUPERFUND SITE
FINAL SITE-WIDE SAFETY AND HEALTH PLAN
FOR ALL OPERABLE UNITS (OU-1 THROUGH OU-4)

U.S. ARMY CORPS OF ENGINEERS CONTRACT NO.
W912DQ-06-D-0006 and W912DQ-08-D-0017

CONTRACTOR QC SIGN-OFF

Malcolm Pirnie, Inc. has reviewed this document.

Project Manager: _____

Date: 10-28-08

Project CIH: _____

Date: 10/28/08

Health and Safety QA/QC Officer: _____

Date: 10/28/08

FIGURES

TABLES

APPENDICES

ATTACHMENTS

1.0 INTRODUCTION

1.1 SCOPE

Malcolm Pirnie, Inc. ('Malcolm Pirnie') is under contract to the United States Army Corps of Engineers ('USACE'), Kansas City District (KC), to provide technical services at four Operable Units (OUs) at the Cornell-Dubilier Electronics Superfund Site ('Site') in South Plainfield, New Jersey.

Studies conducted to date indicate that the Site is contaminated with a variety of chemicals, including polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), dioxins/furans, metals/cyanide, and pesticides. This Site Safety and Health Plan ('SSHP') has been developed to address health and safety requirements for Malcolm Pirnie employees conducting remedial investigations in compliance with Occupational Safety and Health Administration ('OSHA') 29 CFR 1910.120 and 29 CFR 1926.65, and to provide guidance for subcontractors.

This SSHP describe the requirements and procedures for Malcolm Pirnie employee protection for the various investigation activities at the Site. Subcontractors will develop task-specific SSHPs which will contain a hazard evaluation and hazard control methods specific to their tasks. Subcontractor SSHPs will be in addition to Malcolm Pirnie's SSHP and will be consistent with the general provisions and restrictions set out in the Malcolm Pirnie document and meet applicable standards.

This SSHP outlines safety, health and emergency response procedures for preventing accidents and protecting personnel from injury and occupational illness during investigation activities. Included in this SSHP are the assignment of responsibilities, personnel protection minimum requirements, safe work

practices and emergency response procedures. This document is based upon available historical information and includes an assessment of potential physical/chemical hazards associated with each field activity. A copy of the SSHP will be available at the Site, in the keeping of the Project Safety Officer ('PSO'), during field activities. Project personnel and visitors are to comply with this SSHP while on the Site.

It is the intent of this document to address general site safety and health in the main body of the text, and OU-specific safety and health within separate attachments (Attachments A through D) provided at the end of this document. It should be noted that OU-specific SSHPs had previously been developed by Malcolm Pirnie for services at OU-1 and OU-2. This site-wide SSHP has been created based on those initial documents and supercede those documents. Information specific to OU-1 and OU-2 that appears in the attachments specific to these OUs has been taken from those initial documents.

1.2 REGULATORY REQUIREMENTS AND GUIDELINES

The procedures outlined in this SSHP comply with the applicable OSHA requirements contained in 29 CFR 1910 including the final rule contained in 29 CFR 1910.120. The procedures are also consistent with the guidance contained in the following documents:

- Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities prepared jointly by the United States Environmental Protection Agency (USEPA), National Institute for Occupational Safety and Health ('NIOSH'), and OSHA; and
- USACE's Safety and Health Requirements Manual, EM 385-1-1, November 2003.

1.3 CORPORATE HEALTH AND SAFETY POLICY

A copy of the Malcolm Pirnie Health and Safety Program Summary, Accident Prevention Plan, Respiratory Protection Program, and the Substance Abuse Policy is included in Appendix A.

1.4 SAFETY STATISTICS

Safety statistics for Malcolm Pirnie from 2003-2007 are included in Appendix B; these statistics include the firm's experience modification rate ('EMR'), number of recordable incidents, number of lost workdays, and related statistics. OSHA Form 300a – Log of Work-Related Injuries and Illnesses is also included in Appendix B for calendar years 2003-2007.

For subcontractors, safety statistics (e.g., EMR, OSHA Form 300a) will be collected and kept on file. These statistics will be used in evaluating firms' qualifications. Subcontractor safety statistics will be added to Appendix B of this SSHP as they become available.

2.0 SITE BACKGROUND AND SETTING

2.1 SITE LOCATION

The Site is located at 333 Hamilton Boulevard, South Plainfield, Middlesex County, New Jersey. The Site consists of a fenced, 26-acre facility that is bounded on the northeast by Bound Brook and the former Lehigh Valley Railroad, Perth Amboy Branch (presently Conrail); on the southeast by Bound Brook and a property used by the South Plainfield Department of Public Works; on the southwest, across Spicer Avenue, by single family residential properties; and to the northwest, across Hamilton Boulevard, by mixed residential and commercial properties. The surrounding area represents an urban environment with principally commercial and light industrial use to the northeast and east, principally residential development to the south and directly north, and mixed residential and commercial properties to the west.

The developed portion of the facility (the northwestern portion) comprises approximately 45 percent of the total land area and contains temporary asphalt capping following building demolition, a system of catch basins to channel stormwater flow, and paved roadways. Several of the catch basins drain into a stormwater collection system whose outfalls discharge at various locations along Bound Brook. The central part of the undeveloped portion is primarily an open field, with some wooded areas to the south and a paved area in the middle at the location of the recent remedial activities at the Capacitor Disposal Area (CDA), an area where specific capacitor-related debris had been observed. The northeast and southeast boundaries consist primarily of wetland areas adjacent to Bound Brook, which flows from the eastern corner across the northeastern border of the undeveloped portion of the facility (‘FWENC, 2002’).

2.2 SITE HISTORY

Cornell-Dubilier Electronics, Inc. (CDE) operated at what recently was known as the Hamilton Industrial Park from 1936 to 1962, manufacturing electronic components including capacitors. PCBs and chlorinated organic degreasing solvents were used in the manufacturing process and it has been alleged that during CDE's period of operation, the company reportedly disposed of PCB-contaminated materials and other hazardous substances at the facility. A former employee has claimed that the rear of the property was saturated with transformer oils and that capacitors were also buried behind the facility during the same time period (Foster Wheeler, 2002). Based on historic site practices and historical data, portions of the Site soils have the potential to be contaminated with a VOCs, SVOCs, PCBs, dioxins/furans, metals/cyanide, and pesticides.

The Site has been divided into four OUs by the USEPA . Operable Unit-1 (OU-1) includes residential, commercial, and municipal properties in the vicinity of the former CDE facility. On September 30, 2003, the USEPA signed a Record of Decision (ROD) to address OU-1. Operable Unit-2 (OU-2) includes contaminated soils and the former buildings at the Site. On September 30, 2004, the USEPA signed a ROD to address OU-2. Operable Unit-3 (OU-3) includes potentially contaminated on- and off-Site groundwater. Operable Unit-4 (OU-4) includes potentially contaminated sediments in the adjacent Bound Brook.

Historically, the Site contained numerous subdivided buildings, numbered 1 through 18. The Site buildings were vacated in mid-2007 and the USACE has recently directed their demolition as part of the OU-2 remedial action under a separate contract. A Site location map is included as Figure 1.

2.3 PROPOSED FIELD ACTIVITIES

Components of the field investigations at the Site may include, but are not limited to, the following elements:

- Residential property sampling, including surface and shallow soil sampling and building interior dust sampling at OU-1;
- On-Site building material sampling at OU-2;
- Historical Recordation activities at OU-2;
- On-Site soils investigation and sampling (environmental, geotechnical, archaeological, and thermal properties), including drilling and manual soil evaluations (shovel testing) at OU-2;
- Habitat Assessment, including wetlands delineation and time meander search for threatened/endangered flora at OU-2.
- Groundwater investigation and sampling including bedrock drilling and coring, FLUTE™ liner and multi-port well installation, and groundwater sampling at OU-3;
- Investigation of the Bound Brook surface water and associated sediments at OU-4; and

Detailed descriptions of the fieldwork and sampling activities and the Standard Operating Procedures ('SOPs') that are applicable to each field activity are provided in the appropriate Field Sampling Plans ('FSPs') developed for each OU.

3.0 PROJECT ORGANIZATION AND RESPONSIBILITY

3.1 PROJECT ORGANIZATION OF SAFETY PERSONNEL

An organizational chart identifying the project health and safety personnel and reporting relationships is shown in Attachments A through D for OU-1 through OU-4, respectively. Responsibilities of Malcolm Pirnie project personnel are defined below:

3.1.1 Project/Task Organization Overview

The project management team will consist of representatives from USEPA Region 2, USACE-KC, and Malcolm Pirnie. The USEPA Region 2 and the USACE-KC will provide project and contract management guidance to Malcolm Pirnie. Malcolm Pirnie will be the primary contractor and will be responsible for developing and implementing the investigation and will provide project management to the other subcontractors.

3.1.2 Malcolm Pirnie Team Members

This section contains a description of the project organizational structure. Pete Mannino is the USEPA Region 2 Project Manager (PM) with responsibility for OU-1, OU-2, and OU-3, and Mark Austin is the USEPA Region 2 PM with responsibility for OU-4. Ken Maas is the USACE-KC PM. Malcolm Pirnie will be the primary contractor and will be responsible for developing and implementing the investigation and will provide project management to other subcontractors. Additional project team members from other companies may be subcontracted to Malcolm Pirnie.

The following project roles are applicable to work performed under each OU unless specified otherwise in the individual planning documents developed for each OU:

Project Officer – The Project Officer ('PO') is responsible for the commitment of resources required to fulfill Malcolm Pirnie's obligation to the USACE.

Project Manager – The PM responsibilities are shared due to Malcolm Pirnie's involvement in four OUs at the Site. Accordingly, an Administrative PM, Edward Dudek, P.E., has been identified to be responsible for all administrative aspects of the project. Technical PMs have been assigned to OU-3 and OU-4 and are responsible for all technical aspects of those specific OUs; Mr. Dudek serves as the Technical PM for OU-1 and OU-2.

The Malcolm Pirnie PMs are accountable to the PO throughout the duration of the project. The PMs may delegate authority to expedite and facilitate the implementation of the project plan. The PM is responsible for:

- Coordination with the USACE;
- Budget control;
- Subcontractor performance;
- Project coordination to implement Work Plans;
- Allocation of staffing and resources to implement the QA/QC program and the SSHP; and
- Review of engineering and interim reports.

Deputy Project Manager – The Deputy Project Manager ('DPM)' reports directly to, and works with, the Project Manager. The DPM is responsible for assisting the PM, as needed, with project related issues. The DPM will be responsible for the logistics of project activities such as:

- Preparation of WPs and report deliverables.
- Coordination of field activities.

- Scheduling sampling and other activities.
- Review of reports.
- Coordination with USACE.
- Budget control.
- Subcontractor performance.

Project Quality Consultants – The Project Quality Consultants are responsible for independent reviews of project quality. The Project Quality Consultants are integral to the project success by performing technical reviews throughout all project phases and offering technical guidance.

Corporate Health and Safety Manager – The Corporate Health and Safety Manager ('CHSM') is responsible for development and implementation of Malcolm Pirnie's Health and Safety program.

The CHSM serves as the administrator of Malcolm Pirnie's Corporate Health and Safety program. He is responsible for:

- Proper training for Malcolm Pirnie field personnel;
- Medical clearance of Malcolm Pirnie field personnel;
- Field personnel having adequate experience with personal protective equipment;
- Providing guidance on data interpretation; and
- Determining levels of worker protection.

Project Certified Industrial Hygienist – The Project Certified Industrial Hygienist ('PCIH') is responsible for development and implementation and review of the Site Safety and Health Program. The PCIH functions as a liaison with the USACE, OSHA, and other agencies on health and safety issues.

Project Quality Control Officer – The Project Quality Control ('QC') Officer is responsible for project specific supervision and monitoring of the QA program and reports to the Project Manager. Additional responsibilities include:

- Ensuring that field personnel are familiar with and adhere to proper sampling procedures, field measurement techniques, sample identification, and chain-of-custody procedures;
- Coordinating with the analytical laboratory for the receipt of samples, the reporting of analytical results, and recommending corrective actions to correct deficiencies in the analytical protocol or sampling; and
- Preparing QA reports to management.

Project Safety Officer – The Project Safety Officer ('PSO') is knowledgeable in safety and worker protection techniques as they relate to the project. Responsibilities include monitoring daily compliance of Site work to the Health & Safety Plan ('H&SP'), having the ability and authority to make needed changes or additions to the H&SP and providing technical assistance to the Project Manager on problems relating to work Site safety.

The PSO is responsible for the development and set-up of emergency procedures and personnel decontamination procedures. The PSO or designee will complete a daily diary of activities with health and safety relevance. If unsafe work conditions are encountered, the PSO is authorized to stop work. Resolution of all on-Site health and safety problems will be coordinated through the Project Manager with assistance from the PCIH.

Field Team Leader ('FTL') – The Field Team Leader will serve as the on-Site contact person for Malcolm Pirnie for field investigations and activities. The coordinator will be responsible for the logistics of the field activities. The Field Team Leader will:

- Inspect and replace equipment;
- Prepare interim field reports;

- Prepare samples for shipment:
- Coordinate field activities; and
- Schedule sampling and other field activities.

Malcolm Pirnie Field Personnel – All field personnel are required to become thoroughly familiar with the FSP, QAPP, and the SSHP, follow the guidelines outlined in them. Field personnel will implement the plans and contribute any appropriate suggestions and assist in discovering or correcting working procedures.

Malcolm Pirnie personnel who have health and safety responsibility for this project are summarized in each appropriate attachment.

3.2 RESPONSIBILITIES OF SUBCONTRACTORS

Subcontractors – Subcontractors will designate one or more safety and health coordinators, one of whom will be assigned to the Site during field activities involving the subcontractor and act as a liaison between the Malcolm Pirnie PSO and the subcontractor. Each subcontractor will develop a task/hazard analysis addressing the hazards associated with that subcontractor's project tasks. Subcontractor task/hazard analyses the will be added to the Malcolm Pirnie SSHP and will be consistent with the general provisions and restrictions set out in the Malcolm Pirnie SSHP. All subcontractors will adhere to the procedures outlined in their task/hazard analysis documents and will follow all relevant provisions in the Malcolm Pirnie document as well.

Subcontractor Personnel – Subcontractors whose work will be performed on the Site, or who otherwise could be exposed to health and safety hazards, will be advised of known hazards through distribution of Site information obtained by Malcolm Pirnie. As independent employers, each subcontractor is responsible for the health and safety of their employees. However, Malcolm Pirnie will monitor each subcontractor's compliance with the requirements of USACE's

Safety and Health Requirements Manual, EM 385-1-1, this SSHP and all applicable federal, state and local regulations. All subcontractors are responsible for:

- Providing personal protective equipment ('PPE') for their employees, subject to the requirements of their SSHP and Malcolm Pirnie review.
- Providing documentation to the Malcolm Pirnie PSO that their employees have been trained in accordance with the requirements of their SSHP.
- Providing documentation to the Malcolm Pirnie PSO that their employees have received medical clearances as required by their SSHP.
- Providing periodic documentation to the Malcolm Pirnie PSO that their employees are in compliance with the provisions of their SSHP.

Subcontractors will also provide documentation to the Malcolm Pirnie PSO that their employees have received a daily briefing covering their assignment, required PPE, special or unusual conditions and lessons learned. Subcontractor personnel will be encouraged to contribute any appropriate suggestions and assist in discovering or correcting unsafe working conditions. Malcolm Pirnie will document their subcontractor's compliance with the requirements of their SSHP.

3.2.1 Health and Safety Field Inspections and Audits

The PSO will make daily evaluations of the work areas and document the implementation of the SSHP. The resulting checklists will be sent to the PM and the PCIH on a weekly basis. Significant issues will be resolved between the PM, the PCIH, and the PSO as required.

The PCIH or designee will visit the Site and observe field investigation activities including compliance with this SSHP and prepare a Health and Safety Field Audit Report ('HSFAR'), which addresses field activities from a safety perspective. The audit will evaluate the health and safety activities implemented

by the field sampling team and all associated workers in accordance with the SSHP. Any minor deficiencies that are noted during the audit will be corrected in the field as they occur. The HSFAR will identify deficiencies found and will outline the corrective actions that were recommended/implemented to address any minor deficiencies observed. Completed HSFAR forms, including noted deficiencies, will be maintained on-site by the Field Team Leader or Project Safety Officer.

The audit report will also recommend appropriate corrective actions for any major deficiency noted. The findings of all field audits will be used to assess the currency and effectiveness of the SSHP. Suggested modifications to the SSHP will be presented. Any deficiencies in the implementation of the SSHP shall be corrected by Malcolm Pirnie. The HSFAR is provided in Appendix J. The SSHP with the HSFAR form will be maintained at the project site at all times by the Field Team Leader or the Project Safety Officer.

The Malcolm Pirnie PM or DPM will assist with corrective action and maintain a log of the audit finding correction activities in the monthly progress report. The DPM will submit follow-up reports to the USACE PM, describing completed corrective actions that addressed major deficiencies. A minimum of one Health and Safety audit will be conducted by the PCIH per year.

4.0 POTENTIAL HEALTH AND SAFETY HAZARDS AND CONTROLS

Refer to the specific OU attachments for details on potential health and safety hazards and controls.

5.0 PERSONAL PROTECTIVE EQUIPMENT

5.1 GENERAL PROTECTION LEVELS

Personnel must wear protective equipment when work activities involve known or suspected radiological or chemical atmospheric contamination; when vapors, gases, or particulates may be generated; or when direct contact with dermally active substances may occur. Respirators can protect the mucous membranes, the lungs, and the gastrointestinal tract against air toxicants. Safety glasses provide similar protection to the eyes. Chemical-resistant clothing can protect the skin from contact with skin-destructive and skin-absorbable chemicals. Good personal hygiene limits or prevents the ingestion of materials.

Equipment designed to protect the body against contact with known or anticipated chemical hazards has been divided into four categories according to the degree of protection afforded.

Level A: Level A should be selected when the highest level of respiratory, skin and eye protection is needed. It is not anticipated that use of Level A protection will be required at the Site.

Level B: Level B should be selected when the highest level of respiratory protection is needed, but a level of skin protection lower than Level A is required. Level B protection is the minimum level recommended on initial site entries until the hazards have been further defined by on-site studies. It is not anticipated that use of Level B protection will be required at the Site.

Level C: Level C should be selected when the types of airborne contaminants are known, the concentrations have been measured and the criteria for using air-purifying respirators are met. Level C requires the use of a half-face or full-face

air-purifying respirator equipped with an organic vapor, dust, fumes and mists combination cartridge. A non-coated semi-permeable-type coverall (such as Tyvek) is also required.

Level D/Modified Level D: Level D should be selected only when there are no respiratory or skin hazards suspected or known to exist at the site.

5.2 REQUIRED LEVEL OF PROTECTION

Based upon current information regarding the contaminants present at the Site and a Task hazard analysis of the tasks to be completed (see Tables A4-1, B4-1, B4-2, B4-3, C4-1 and D4-1 in Attachments A through D for OU-1 through OU-4, respectively), the required level of personal protection for each OU is are presented in the specific OU attachments. Action Levels have been set for various activities and are also presented in the specific OU attachments. The Malcolm Pirnie Corporate Health and Safety Program Guide contains the protocol for PPE and Respiratory Protection, as required by the HAZWOPER Standard (29 CFR 1910.120).

The following PPE will be required for each level of protection:

Level C. Equipment Requirements for Level C are as follows:

- Full-face or half-face air purifying respirator with multigas/particulate cartridges.
- Semi-permeable disposable coveralls, such as Tyvek®, when body contact with contaminated solid media is anticipated;
- Coated disposable coveralls when splashing or wet weather is anticipated;
- Outer gloves (Nitrile), chemical-resistant;
- Inner gloves (Latex), chemical-resistant (optional);
- Chemical-resistant, steel toed safety boots which meet American National Standards Institute (‘ANSI’) Z41;
- Safety glasses or chemical splash goggles which meet ANSI Z87;
- Hard hat that meets ANSI Z89.1 1997 Class 1, Type E;

- Hearing protection [if noise levels exceed 85 dBA, then hearing protection must be used with an OSHA Noise Reduction Rating ('NRR') of at least 20 dBA, in accordance with ANSI Standards].
- Type II Reflective vest.
- Neoprene overboots.

Modified Level D: Equipment Requirements for Modified Level D are as follows:

- Semi-permeable disposable coveralls, such as Tyvek®, when body contact with contaminated solid media is anticipated;
- Coated disposable coveralls when splashing or wet weather is anticipated;
- Outer gloves (Nitrile), chemical-resistant;
- Inner gloves (Latex), chemical-resistant;
- Chemical-resistant, steel toed safety boots which meet ANSI Z41;
- Safety glasses or chemical splash goggles which meet ANSI Z87;
- Hard hat that meets ANSI Z89.1 1997 Class 1, Type E;
- Hearing protection [if noise levels exceed 85 dBA, then hearing protection must be used with an OSHA NRR of at least 20 dBA, in accordance with ANSI Standards];
- Type II Reflective vest; and
- Neoprene overboots.

Level D: Equipment Requirements for Level D are as follows:

- Coveralls or suitable work clothing, in accordance with weather conditions (*e.g.*, blue jeans and long- or short-sleeved shirt, depending on the weather);
- Gloves (optional);
- Chemical-resistant, steel toed safety boots which meet ANSI Standards Z41;
- Safety glasses or chemical splash goggles which meet ANSI Z87;
- Hard hat that meets ANSI Z89.1 1997 Class 1, Type E;
- Type II Reflective vest; and
- Neoprene overboots (optional).

5.3 INSPECTION AND USE OF PPE

5.3.1 Inspection of PPE

Before use of protective clothing, all personnel should determine that the clothing material is correct for the specified task at hand. The clothing is should be visually inspected for imperfect seams, non-uniform coatings, tears, and malfunctioning closures. It should be held up to the light to check for pinholes. It should be flexed to observe for cracks or other signs of shelf deterioration. If the product has been used previously, it should be inspected inside and out for signs of chemical deterioration, such as discoloration, swelling and stiffness. During work, the clothing should be periodically inspected for evidence of chemical deterioration, closure failure, tears, punctures and seam discontinuities.

Before using gloves, the gloves should be visually inspected for pinholes, imperfect seams, or tears. Glasses and lenses should be checked for cracks, crazing and fogginess. Equipment that is found to be defective must be replaced immediately.

5.3.2 PPE Donning Procedures

The following procedures shall be used when donning PPE:

- Remove bulky outerwear;
- Put on work clothes or coveralls;
- Put on the required chemical protective coveralls;
- Put on the required chemical protective boots or boot covers;
- Put on the required chemical protective gloves;
- Don remaining PPE, such as safety glasses or goggles.

5.3.3 PPE Doffing Procedures

Whenever a field crew member leaves the work area, the following decontamination sequence must be followed:

- Rinse contaminated materials from the boots or remove contaminated boot covers;
- Clean reusable protective equipment;
- Remove protective garments and equipment (remove inner gloves last to protect against dermal contact during doffing of outer garments); all disposable clothing should be placed in plastic bags, which must be labeled with contaminated waste labels;
- Wash hands, arms, face, and neck as appropriate;
- All disposable equipment, garments, and PPE must be placed into plastic bags, which must be labeled for disposal.

Discussion of decontamination procedures for PPE and other equipment is provided in the FSP for each OU.

6.0 HEALTH AND SAFETY ORIENTATION TRAINING

6.1 INTRODUCTION

Malcolm Pirnie, Inc. personnel and subcontractor personnel involved with the investigation activities are required to have completed the 40-hour Hazardous Waste Operations and Emergency Response site worker training as specified in 29 CFR 1910.120. This training, designed to orient personnel potentially exposed to hazardous substances, health hazards, and safety hazards, includes the following:

- Safety and health risk analysis.
- Use of PPE.
- Work practices by which the employee can minimize risks from hazards.
- Safe use of engineering controls and equipment.
- Medical surveillance requirements including recognition of symptoms and signs which might indicate overexposure to hazards.
- Procedures for environmental monitoring, site control, and decontamination.
- Emergency response plans.

All personnel will also have proof of attendance at an annual 8-hour Hazardous Waste Operations and Emergency Response site worker refresher course. In addition, a minimum of two field personnel with current CPR/First Aid Training will be present on-site during all field activities. Additionally, all asbestos personnel will be trained in accordance with federal AHERA and ASHARA requirements. See Appendix D for training information.

6.2 SPECIALIZED TRAINING

Malcolm Pirnie employees, subcontractors, and other field personnel are to be knowledgeable in the particular hazards that may be encountered during this project and be familiar with safe operating procedures. This will be accomplished through the review of this SSHP, specialized training prior to the commencement of the fieldwork, an audit of field activities and safety meetings during the program, as discussed below. Forms for the documentation of site-specific training are contained in Appendix D.

Field personnel will have a minimum of three days of documented field experience under a skilled supervisor and be familiar with site operations and emergency procedures outlined in this SSHP. CPR and First Aid training is encouraged for all field personnel. The PSO and all supervisory personnel will have attended additional training, including CPR, First Aid, and 8-hour Hazardous Waste Operations and Emergency Response Supervisor training. Subcontractors will be responsible for ensuring that their employees receive and are current in all required Hazardous Waste Operations and Emergency Response and specialized training for their job functions and responsibilities.

Other specialized training which will be required before the commencement of specific elements of the field work will include the following:

- Lift training for all field team members

The PSO and alternate PSO will have current 10-hour OSHA Construction Safety training, Supervisor training, and CPR/FA/BBP training.

6.2.1 Pre-Investigation Health and Safety Briefing

Malcolm Pirnie and subcontractor personnel involved with the project will attend a site-specific health and safety briefing prior to initiation of the field activities. The topics to be discussed will include:

- Characteristics and potential hazards of contaminants known to be present at the site.
- Approved routes to and away from the work areas.
- Personal protective clothing: function, donning/doffing.
- Personal hygiene.
- Location of available restrooms.
- Decontamination procedures.
- General safety concepts.
- Emergency recognition and prevention.
- Temperature stress.
- Signs and symptoms of over exposure to site specific chemical hazards.
- Hazard communication.
- Emergency action plan.
- Site contingency plans.

6.2.2 Tailgate Safety Meetings

The PSO or designee shall conduct morning safety and health briefings on an as-needed basis but not less than once per week. Issues relative to temperature stress, or the interpretation of newly available environmental monitoring data, are examples of topics that might be covered during these briefings. Visitors will be properly oriented to existing site conditions, planned activities, levels of personal protection, and other procedures outlined in this SSHP. The checklist for the tailgate safety meeting is included as Appendix E. A weekly copy is to be sent to the PM and the PCIH.

6.3 HAZARD COMMUNICATION

Malcolm Pirnie has a written hazard communication program which was established to meet the requirements of 29 CFR 1910.1200, and field activities shall be implemented in accordance with that program, as described below.

Material Safety Data Sheets ('MSDSs') for hazardous chemicals introduced to the site by Malcolm Pirnie and their subcontractors will be kept at an established MSDS Station in an accessible, common area of the field office for review by all on-site personnel. Labels on containers used by Malcolm Pirnie are as originally received (not to be defaced) and are to contain the following information: (1) the identity of the hazardous chemical(s); (2) the appropriate hazard warnings; and (3) the name and address of the chemical manufacturer. If an employee transfers chemicals from a labeled container to a portable container, a label that contains those three items must be affixed to it. If the portable container is intended only for that employee's immediate use (*i.e.*, during the same work shift), then the container may be clearly marked with only the product name. The employee will be responsible to properly empty, clean, or dispose of the portable container immediately after use.

As part of the site-specific health and safety orientation conducted by the PSO, a review of Malcolm Pirnie's hazard communication program will be included to inform employees of hazardous chemicals to which they may be exposed during field activities. Subcontractors will also attend the hazard communication training session. If the chemical hazard changes or a new chemical hazard is introduced into the area after work begins, additional training will be provided by the PSO.

Site-specific hazard communication training for hazardous chemicals introduced to the site by Malcolm Pirnie will include:

- Properties and hazard (chemical, physical, toxicological) of each hazardous chemical;

- Health hazards, including signs and symptoms of exposure and any medical condition known to be aggravated by exposure;
- Measures employees can take to protect themselves, including: appropriate work practices or methods for proper use and handling, procedures for emergency response, and the proper use and maintenance of PPE, as required;
- Work procedures for employees to follow to protect themselves when cleaning hazardous chemical spills and leaks;
- Use of the container labeling system and the MSDSs including: where MSDSs are located, how to read and interpret the information on both labels and MSDSs, and how employees may obtain additional hazard communication information.

Site-specific hazard communications training will also cover hazardous chemicals introduced by other employers and shall emphasize:

- Information about the hazardous chemicals to which Malcolm Pirnie's employees may be exposed;
- An explanation of the labeling system other employers are using;
- Information about the precautionary measures Malcolm Pirnie employees need to take to protect themselves during normal operating conditions and in emergencies;
- Location of MSDSs for hazardous chemicals brought to the site by other employers.

A copy of this SSHP and Malcolm Pirnie's Hazard Communication policy will be kept at an accessible, common area of the field office. In addition, MSDSs and portions of the SSHP will be compiled into a single binder and kept on-site during field activities.

7.0 MEDICAL SURVEILLANCE AND EXPOSURE MONITORING

7.1 MEDICAL SURVEILLANCE

Malcolm Pirnie personnel who may have potential exposure to hazardous materials will have an initial employment, an annual, and a termination examination. Medical evaluations will be performed by an approved occupational physician in accordance with Malcolm Pirnie's Medical Monitoring Program. All Malcolm Pirnie field personnel shall be enrolled in Malcolm Pirnie's Medical Monitoring Program, be medically approved to wear respirators, and fit-tested in accordance with OSHA requirements. Subcontractors are also required to meet medical surveillance requirements for this project.

Purpose – The purposes of the medical evaluation are to: 1) determine fitness for duty on hazardous waste sites; and 2) establish baseline data for future reference. Such an evaluation is based upon the employee's occupational and medical history, a comprehensive physical examination, and an evaluation of the ability to work while wearing protective equipment. The medical examination will include an evaluation of the worker's ability to use respiratory protective equipment.

Blood Testing – Due to the potential of elevated levels of contaminated dust measured at this site, employees and subcontractors who will work on this site for seven or more days may be included in Malcolm Pirnie's Contaminant Exposure Program. This Program includes blood testing prior to assignment and retesting after the first month, the third month, the sixth month and annually thereafter unless elevated levels are detected. The conclusion of the field work

or reassignment from the project may result in the employee receiving a close out blood test.

Supplemental Examinations – Supplemental examinations may be performed whenever there is an actual or suspected excessive exposure to chemical contaminants or upon experience of exposure symptoms, or following injuries or temperature stress.

7.2 HEAT STRESS MONITORING

Heat stress is caused by a number of interacting factors, including but not limited to: environmental conditions, clothing, workload, and the physical condition of the individual. Since heat stress is one of the most common illnesses associated with heavy outdoor work conducted with direct solar load and, in particular, because wearing PPE can increase the risk of developing heat stress, workers must be capable of recognizing the signs and symptoms of heat-related illnesses. Personnel must be aware of the types and causes of heat-related illnesses and be able to recognize the signs and symptoms of these illnesses in both themselves and their co-workers.

Hazards

The four major harmful effects of overexposure to heat are outlined and discussed below.

Heat Rashes

Heat rashes are one of the most common problems in hot work environments. Commonly known as prickly heat, a heat rash is manifested as red papules and usually appears in areas where the clothing is restrictive. As sweating increases, these papules give rise to a prickling sensation. Prickly heat occurs in skin that is persistently wetted by unevaporated sweat, and heat rash papules may become

infected if they are not treated. In most cases, heat rashes will disappear when the affected individual returns to a cool environment.

Heat Cramps

Heat cramps are usually caused by performing hard physical labor in a hot environment. These cramps have been attributed to an electrolyte imbalance caused by sweating. It is important to understand that cramps can be caused both by too much or too little salt. Cramps appear to be caused by the lack of water replenishment. Because sweat is a hypotonic solution (+/- 0.3% NaCl), excess salt can build up in the body if the water lost through sweating is not replaced.

Thirst cannot be relied on as a guide to the need for water; instead, water must be taken every 15 to 20 minutes in hot environments. Under extreme conditions, such as working for 6 to 8 hours in heavy protective gear, a loss of sodium may occur. Drinking commercially available carbohydrate electrolyte replacement liquids is effective in minimizing physiological disturbances during recovery.

Heat Exhaustion

Heat exhaustion occurs from increased stress on various body organs due to inadequate blood circulation, cardiovascular insufficiency, or dehydration. Signs and symptoms include pale, cool, and moist skin; heavy sweating; dizziness; nausea; headache; vertigo; weakness; thirst; and giddiness. Fortunately, this condition responds readily to prompt treatment.

Heat exhaustion should not be dismissed lightly for several reasons. Fainting associated with heat exhaustion can be dangerous because the victim may be operating machinery or controlling an operation that should not be left unattended; moreover, the victim may be injured when he or she faints. Also, the signs and symptoms seen in heat exhaustion are similar to those of heat stroke,

which is a medical emergency. Workers suffering from heat exhaustion should be removed from the hot environment, be given fluid replacement, and be encouraged to get adequate rest.

Heat Stroke

Heat stroke is the most serious form of heat stress. Heat stroke occurs when the body's system of temperature regulation fails and the body's temperature rises to critical levels. This condition is caused by a combination of highly variable factors, and its occurrence is difficult to predict. Heat stroke is a medical emergency.

The primary signs and symptoms of heat stroke are confusion; irrational behavior; loss of consciousness; convulsions; a lack of sweating (usually); hot, dry skin; and an abnormally high body temperature [e.g., a rectal temperature of 41 degrees Celsius (°C) (equivalent to 105.8°F)]. If body temperature is too high, death can occur. The elevated metabolic temperatures caused by a combination of workload and environmental heat load, both of which contribute to heat stroke, are also highly variable and difficult to predict. If a worker shows signs of possible heat stroke, professional medical treatment should be obtained immediately.

The worker should be placed in a shady area and the outer clothing should be removed. The worker's skin should be wetted and air movement around the worker should be increased to improve evaporative cooling until professional methods of cooling are initiated and the seriousness of the condition can be assessed. Fluids should be replaced as soon as possible. The medical outcome of an episode of heat stroke depends on the victim's physical fitness and the timing and effectiveness of first-aid treatment.

Regardless of the worker's protestations, no employee suspected of being ill from heat stroke should be sent home or left unattended unless a physician has specifically approved such an order.

Proper training and preventive measures will help avert serious illness and loss of work productivity. Preventing heat stress is particularly important because once someone suffers from heat stroke or exhaustion, that person may be predisposed to additional heat injuries.

Control Measures

Measures to prevent heat stress include regular work breaks during field activity, regular fluid replenishment, the availability of shelter (i.e., shaded area), and wearing of appropriate clothing (e.g., lightweight clothes, light-colored clothes, breathable fabrics, hats to protect from the sun). All personnel will be made aware of the symptoms of heat stress. If one or more symptoms are detected, the affected worker will be assisted to seek shade, drink plenty of fluids, and seek medical attention, if required.

Several screening techniques can be used to detect early warning signs of heat stress. The PSO may choose to monitor heat stress by measuring either body temperature or heart rate. Each method is described below.

Body Temperature Measurement

Body temperature may be measured with a digital-readout clinical ear thermometer with disposable tips. The following method, based on body temperature measurements, is simple to perform, straightforward, and may be conducted by the PSO.

Body temperature may be measured for three minutes with an ear thermometer at the end of each work period and before drinking fluids. Temperature at the end of the work period should not exceed 99.6°F. If the temperature exceeds

99.6°F, then the next work period should be shortened by 10 minutes (or by 33%), while the length of the rest period is kept the same. If the temperature exceeds 99.6°F at the beginning of the next rest period, however, the following work cycle should be further shortened by 33%. Temperature should be measured again at the end of the rest period to make sure that it has dropped below 99.6°F. No worker may be permitted to continue wearing semi-permeable or impermeable garments when his/her temperature exceeds 100.6°F.

Heart Rate Measurement

When measuring heart rate, the field team member should be escorted to an area of the site where no imminent danger exists. The field team member may remain standing during the measurement. The PSO may measure heart rate by using his or her forefinger to find in the wrist of a field team member, or at the carotid artery in the neck. The PSO will not his or her thumb to measure heart rate, as the thumb has its own pulse. After finding the pulse of the affected field team member, the PSO will count the beats for 10 seconds (using a wristwatch) and multiply the number of beats by 6 to find the field team member's heart rate.

If any site worker has a heart rate exceeding 115 beats per minute (measured immediately prior to a rest period), one or more of the following control measures must be used to help control heat stress:

- Site workers will be encouraged to drink plenty of water and electrolyte replacement fluids throughout the day
- On-site drinking water will be kept cool (50 to 60°F).
- A work regimen that will provide adequate rest periods for cooling down will be established, as required.
- All personnel will be advised of the dangers and symptoms of heat stroke, heat exhaustion, and heat cramps.
- Cooling devices, such as vortex tubes or cooling vests, should be used when personnel must wear impermeable clothing in conditions of extreme heat.

- Site personnel should be instructed to monitor themselves and co-workers for signs of heat stress and to take additional breaks as necessary.
- A shaded rest area must be provided. All breaks should take place in the shaded rest area.
- Site personnel must not be assigned to other tasks during breaks.
- Site personnel must remove impermeable garments during rest periods. This includes white Tyvek-type garments.

Should one or more symptoms be detected, the affected worker will be assisted to seek shade, drink plenty of fluids, and seek medical attention, if required. Several screening techniques can be used to detect early warning signs of heat stress. The following method, based on body temperature measurements, is simple and straightforward and may be conducted by the Field Team Leader or Project Safety Officer. Body temperature may be measured with a digital-readout clinical ear thermometer with disposable tips.

Body temperature may be measured for three minutes with an ear thermometer at the end of each work period and before drinking. Temperature at the end of the work period should not exceed 99.6°F. If the temperature does exceed 99.6°F, the next work period should be shortened by 10 minutes (or 33%), while the length of the rest period stays the same. If the temperature exceeds 99.6°F at the beginning of the next rest period, however, the following work cycle should be further shortened by 33%. Temperature should be measured again at the end of the rest period to make sure that it has dropped below 99.6°F. No worker may be permitted to continue wearing semi-permeable or impermeable garments when his/her temperature exceeds 100.6°F. Heat stress monitoring of site workers will be maintained in the site logbook

All project personnel must be informed of the importance of adequate rest, acclimation, and proper diet in the prevention of heat stress disorders.

7.3 COLD STRESS MONITORING

Cold stress normally occurs in temperatures at or below freezing, or under certain circumstances, in temperatures of 40°F.

Hazards

Extreme cold for a short time may cause severe injury to exposed body surfaces or result in profound generalized cooling, causing death. Areas of the body that have high surface area-to-volume ratio, such as fingers, toes, and ears, are the most susceptible. Two factors influence the development of a cold weather injury: ambient temperature and the velocity of the wind. For instance, 10°F with a wind of 15 miles per hour (mph) is equivalent in chilling effect to still air at 18°F. An equivalent chill temperature chart relating the actual dry bulb temperature and wind velocity is presented in Table 7-1, below.

TABLE 7-1: WIND CHILL TEMPERATURE CHART

Estimated Wind Speed (mph)	Actual Temperature Reading (°F)											
	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
	Equivalent Chill Temperature (°F)											
Calm	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57	-68
10	40	28	16	4	-9	-24	-33	-46	-58	-70	-83	-95
15	36	22	9	-5	-18	-32	-45	-58	-72	-85	-99	-112
20	32	18	4	-10	-25	-39	-53	-67	-82	-96	-110	-121
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118	-133
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	-140
35	27	11	-4	-20	-35	-51	-67	-82	-98	-113	-129	-145
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116	-132	-148
(Wind speeds >40 mph have little additional effect.)	Little Danger: Maximum danger of false sense of security.				Increasing Danger: Danger from freezing of exposed flesh within one minute.			Great Danger: Flesh may freeze within 30 seconds.				
	Trench foot and immersion foot may occur at any point on this chart.											

Note: This chart was developed by the U.S. Army Research Institute of Environmental Medicine, Natick, MA (Source: ACGIH Threshold Limit Values for Chemical Substances and Physical Agents).

Frostbite is the generic term for a local injury resulting from cold. Several degrees of tissue damage are associated with frostbite. Frostbite of the extremities can be categorized into:

- Frost Nip or Incipient Frostbite - characterized by sudden blanching or whitening of skin.
- Superficial Frostbite - skin has a waxy or white appearance and is firm to the touch, but tissue beneath is resilient.
- Deep Frostbite - tissues are cold, pale, and solid; extremely serious injury.

Systemic hypothermia is caused by exposure to freezing or rapidly dropping temperature. It can be fatal. It's symptoms are usually exhibited in five stages:

1. Shivering;

2. Apathy, listlessness, sleepiness, and (sometimes) rapid cooling of the body to less than 95°F;
3. Unconsciousness, glassy stare, slow pulse, and slow respiratory rate;
4. Freezing of the extremities; and
5. Death.

Trauma sustained in freezing or sub-zero conditions requires special attention because an injured worker is predisposed to secondary cold injury. Special provisions must be made to prevent hypothermia and secondary freezing of damaged tissues in addition to providing for first-aid treatment. To avoid cold stress, site personnel must wear protective clothing appropriate for the level of cold and physical activity. In addition to protective clothing, preventive safe work practices, additional training, and warming regimens may be utilized to prevent cold stress.

Control Measures

To prevent cold stress illnesses, follow the safety precautions listed below:

- Protective gloves are typically worn during field activities. These gloves offer some thermal protection.
- For air temperature of 0°F or less, mittens should be used to protect the hands. For exposed skin, continuous exposure should not be permitted when air speed and temperature results in a wind chill temperature of -25°F.
- At air temperatures of 36°F or less, field personnel who become immersed in water or whose clothing becomes wet must be immediately provided with a change of clothing and be treated for hypothermia.
- If work is done at normal temperature or in a hot environment before entering the cold, the field personnel must verify that their clothing is not wet due to perspiration. If wet, field personnel must change into dry clothes prior to entering the cold area.
- If the available clothing does not give adequate protection to prevent hypothermia or frostbite, work must be modified or suspended until adequate clothing is made available or until weather conditions improve.

- Appropriate clothing shall be worn by field personnel (e.g., hats, layered clothing, thermal underwear); field personnel will check that clothing does not interfere with ability to perform field tasks.
- Field personnel handling evaporative liquid (e.g., gasoline, alcohol, or cleaning fluids) at air temperatures below 40°F must take special precaution to avoid soaking of clothing or gloves with the liquids because of the added danger of cold injury due to evaporative cooling.

In addition, the following safe work practices should be employed to prevent cold stress:

- All field personnel will be provided with adequate cold weather gear including insulated coveralls, gloves or mittens, and cold weather boots. Warming facilities or equipment will be provided (e.g., heated car) and utilized by field personnel as needed. If extremely cold or severe weather conditions are forecast, work activities should be postponed.
- Direct contact between bare skin and cold surfaces (less than 20°F) should be avoided. Metal tool handles and/or equipment controls should be covered by thermal insulating material.
- For work performed in a wind chill temperature at or below 10°F, workers should be under constant protective observation (buddy system). The work rate should be established to prevent heavy sweating that will result in wet clothing. For heavy work, rest periods must be taken in heated shelters and workers should be provided with an opportunity to change into dry clothing if needed.
- Field personnel should be provided the opportunity to become accustomed to cold-weather working conditions and required protective clothing.
- Work should be arranged in such a way that sitting or standing still for long periods is minimized.
- During the warming regimen (rest period), field personnel should be encouraged to remove outer clothing to permit sweat evaporation or to change into dry work clothing. Dehydration, or loss of body fluids, occurs insidiously in the cold environment and may increase susceptibility to cold injury due to a significant change in blood flow to the extremities. Fluid replacement with warm, sweet drinks and soups is recommended. The intake of coffee should be limited because of diuretic and circulatory effects.

The PSO shall be vigilant in order to identify **hypothermia** in its earliest stage, thus preventing a potential hazard to the worker. The most important sign of hypothermia is a change in behavior; this is often subtle and typically best recognized by a co-worker or the PSO. Physical and behavioral symptoms of hypothermia include:

- Pain in the extremities;
- Decrease in usual work efficiency;
- Forgetfulness and a decreased level of communication;
- Decline in manual dexterity;
- Poor motor skills or repetitive behavior;
- Poor judgment;
- Lack of concern for physical needs;
- Cold, pale skin appearance, shivering, and goosebumps;
- Maximum severe shivering develops when the body temperature drops to 95° F. This must be taken as a sign of danger to workers and exposure to cold should be immediately terminated.

Mild hypothermia is treated by calling 911 and then re-warming the affected person by:

- Moving to a protected area;
- Removing wet or damp clothing and changing into dry clothing;
- Drinking warm fluids;
- Wrapping in dry blankets;

More **severe cases of hypothermia** require prompt intervention by medical personnel in addition to the above activities. Refer to Section 12.4 for directions to the nearest hospital.

Mild cases of **frostbite** (*i.e.*, the affected area can still be sensed as painful) may be treated in the field by re-warming. More serious cases of frostbite should be treated at a medical facility since attempting to thaw the frozen area may cause

severe damage. A victim of serious frostbite will be protected from the environment and protected from further heat loss, but the skin should not be rubbed or thawed with warm water or dry heat.

7.4 NOISE EXPOSURE MONITORING

As part of the required baseline annual or bi-annual medical evaluation all employees undergo an audiometric evaluation. The annual or bi-annual audiogram is compared to the baseline to determine if the employee has had a Standard Threshold Shift ('STS'). Employees who have had an STS will be required to wear hearing protection whenever they work on-site.

While working on various tasks during this project, employees may be exposed to noise levels in excess of the OSHA PEL of 90 decibels on the A-weighted scale ('dBA') for a short period of time. As part of the hazard evaluation, noise levels will be evaluated periodically during this project to identify activities that subject employees to elevated noise levels. If possible, to control these elevated noise levels, engineering or administrative controls will be implemented. If these controls are not feasible, then hearing protection with an adequate NRR will be issued to these employees in accordance with Malcolm Pirnie's Corporate Hearing Conservation Program (provided as Appendix F).

8.0 HAZARDOUS MATERIAL MONITORING

The PCIH may require that exposure monitoring be performed for specific activities at an OU. Refer to the OU-specific attachments for exposure monitoring details.

9.0 SITE CONTROL MEASURES

Access of non-essential personnel to the Work Zones will be controlled by the FTL. Only personnel who are essential to the completion of the task and wearing the prescribed level of protection will be allowed access to these areas at the discretion of the FTL. Entrance of non-contractor or subcontractor personnel must be approved by the PSO based on that person's documentation of training described in Section 6.0.

10.0 USACE ACCIDENT REPORTING AND RECORDKEEPING

10.1 Exposure Data Collection

The Corporate Health and Safety Administrator or suitable delegate will be responsible for collecting employee exposure data including man hours worked. Exposure monitoring will be conducted in accordance with Section 7.0, and Attachments A through D. Malcolm Pirnie Safety Statistics for the years 2000-2005 are included in Appendix B.

10.2 Accident Investigations and Reports

As stated in Section 13.3.3, all persons must report any near-miss incident, accident, injury, or illness to their immediate supervisor or the FTL. The FTL must conduct an accident investigation as soon as emergency conditions no longer exist and/or first-aid or medical treatment has been administered. The report must be completed and submitted to the PSO and PCIH within 24 hours after the incident. An Incident/Near Miss Investigation Report is included in Appendix H.

10.3 Immediate Notification of Major Accidents

All project team members are responsible for notifying the PCIH and PM of all injuries or occupationally related illnesses which occur incidentally to this project. Accident reporting procedures are detailed in Section 13.6.

11.0 DECONTAMINATION PROCEDURES

11.1 INTRODUCTION

The degree of decontamination required is a function of both a particular activity and the physical environment within which it takes place. Decontamination procedures for personnel, equipment, and PPE are described below. The PSO or designee will monitor these procedures.

11.2 PERSONNEL DECONTAMINATION

Decontamination will take place in a designated decontamination area within the Work Zone. Personnel egress to and from this zone will be limited. This will minimize the potential spread of contaminated materials to clean areas. Upon leaving the site for lunch break or at the end of each work shift, personnel will be required to remove all contaminated clothing or equipment and utilize appropriate hygiene methods. Upon completion of tasks that require the use of safety equipment, at each time of break, or at the end of each work shift, the work crew will proceed toward the designated decontamination area.

11.3 EQUIPMENT DECONTAMINATION

All potentially contaminated equipment will remain in the work zone until the end of the activity. In the event that field decontamination of equipment is necessary, the following reagents may be used: Alconox, analyte free water, hexane, methanol, or acetone. MSDSs for these chemicals can be found in Appendix G. Detailed information on equipment decontamination is included in the FSP for each OU.

11.4 PPE DECONTAMINATION

Where and whenever possible, single-use, disposable, external protective clothing must be used for work. When a Tyvek, nitrile gloves, or other disposable type of PPE is required, it will be removed in such a way so as not to contaminate the Work Zone. Disposable PPE will be placed in a trash bag and disposed of as normal domestic waste.

11.5 DECONTAMINATION FOR MEDICAL EMERGENCIES

In the event of a minor, non-life-threatening injury, personnel should follow the decontamination procedures as outlined above, and then administer first aid. In the event of a major injury or other serious medical concern, immediate first-aid is to be administered in lieu of further decontamination efforts unless the environmental conditions would be considered “Immediately Dangerous to Life or Health,” in which case all personnel shall evacuate the site.

11.6 WASTE DISPOSAL PROCEDURES

All discarded materials, waste materials, or other objects will be handled in such a way as to preclude the potential for spreading contamination, creating a sanitary hazard, or causing litter to be left on-site. All potentially contaminated materials will be bagged or containerized as necessary and segregated for proper disposal. All contaminated waste materials will be disposed of in a manner consistent with regulatory requirements. All non-contaminated materials will be collected and bagged for appropriate disposal as normal domestic waste. Detailed information on field investigative derived waste is included in the FSP for each OU.

12.0 STANDARD OPERATING PROCEDURES FOR SAFETY

12.1 GENERAL REQUIREMENTS

The Site contains a range of physical hazards that must be understood by all field personnel assigned to work on this site. At a minimum, the safe work practices to be followed at the site shall include:

- The number of personnel and equipment on the site shall be minimized, consistent with effective site operations.
- On-site personnel shall use the "buddy" system. No one may work alone (*i.e.*, out of earshot or visual contact with other workers). In addition, each field team will be required to carry a two-way radio and have access to a cellular phone.
- Site activities will be performed to minimize dust production and sediment disturbance.
- Contact with materials either suspected or known to be contaminated will be avoided to minimize the potential for transfer to personnel, as wells as cross contamination and the need for decontamination.
- Eating, drinking, chewing gum or tobacco, smoking, or any practice, which increases the probability of hand-to-mouth transfer of contaminated material, is strictly prohibited in the work area.
- Medicine and alcohol can potentate the effects of exposure to toxic chemicals. Due to possible interactions, use of prescribed drugs should be reviewed with the contractor or subcontractor occupational physician. Alcoholic beverage and illegal drug intake are strictly forbidden during site work activities.
- When it is necessary for a visitor to observe the fieldwork, that person will be issued appropriate PPE, briefed on potential hazards, safety practices, decontamination procedures and site communications. All site visitors must supply proof of training testing to the PSO or designee.
- All employees have the obligation to correct or report unsafe work conditions.

13.0 EMERGENCY RESPONSE PLAN

13.1 GENERAL

This section presents emergency response procedures, including medical emergencies and injury, first aid treatment, illness, near-miss reporting requirements, and fire and spill response protocols.

Each work area will be evaluated for the potential for fire, explosion, chemical release, or other emergency. An evacuation route from each specific work area must be identified prior to beginning work in the area.

Unusual events, activities, chemicals, and conditions must be reported to the FTL/PSO immediately. The FTL/PSO will discuss and resolve these issues with the PCIH and/or PM as appropriate.

13.2 EMERGENCY EQUIPMENT

Emergency equipment will be readily accessible and distinctly marked. Malcolm Pirnie and/or subcontractor personnel shall be familiar with the location of, and trained in the use of, emergency equipment. The emergency equipment items described in the following paragraphs will be available on-site in a Malcolm Pirnie field vehicle.

Fire Extinguishers

Malcolm Pirnie and subcontractors will provide fire extinguishers. Class A, B dry chemical fire extinguishers shall be located on-site. Immediately after each use, fire extinguishers are to be either recharged or replaced. Fire extinguishers are to be suitably placed, distinctly marked, and readily accessible.

First Aid Kits

First Aid Kits shall consist of a weatherproof container with individually-sealed packages for each type of item. First Aid Kits will be fully equipped before being sent out on each job and will be checked by the PSO to ensure that any expended items are replaced. First Aid Kits shall be suitably placed, distinctly marked, and readily accessible.

Eye Wash

In the event of contamination by dust particles during any remedial activity, an emergency eye wash will be available on-site during all field activities. The eye wash station(s) will be checked by the PSO to ensure that they are filled, pressurized, and clean. Eye wash stations shall be suitably placed, distinctly marked, and readily accessible.

13.3 EMERGENCY RESPONSE

If an incident (*e.g.*, injury, fire) occurs, the FTL must take the following steps:

- Evaluate the incident and assess the need for assistance and/or evacuation;
- Call for outside assistance as needed;
- Notify the PSO and PCIH of the incident;
- Notify USACE and its representatives of the incident; and
- Take appropriate measures to stabilize the incident scene.

In the event of an accident (*e.g.*, accident involving personal or property damage), the personnel involved will immediately notify emergency services by dialing 911, so that the proper emergency personnel can respond. Following this call, the same personnel will notify the appropriate PSO, PCIH, and PM. In addition, appropriate emergency measures will immediately be taken by site personnel to assist those who have been injured and to protect others from

hazards. These measures may include contacting the relevant authorities (depending on the nature of the emergency) and/or health care facilities and moving those involved to a secure location, as appropriate. If necessary, the PCIH will call the New Jersey State Spill Response at (877) 927-6337 to report spills that occurred as a result of the accident.

Upon the occurrence of any event (a release of a regulated chemical in an amount in excess of the reportable quantity ['RQ'] to the environment) during the performance of the work which requires reporting to the National Response Center under Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act ('CERCLA'), such reporting will be made, as well as any required notifications and reports to the USEPA and the New Jersey Department of Environmental Protection ('NJDEP').

In the event of any action or occurrence during the performance of the work which causes or threatens to cause a release of a hazardous substance that may present an immediate threat to public health or welfare or the environment, the USACE and the NJDEP will be notified by the appropriate PCIH immediately upon obtaining knowledge of such action or occurrence. Such notifications will be made to the USACE Project Manager (or to alternate contacts, in the case of unavailability).

In the event of emergency, the FTL must take all reasonable measures to confirm that the fire, explosion, or discharge does not occur, recur, or spread to other materials or waste at the site. These measures include stopping operations, collecting and containing released materials or wastes, and removing or isolating containers.

The following sub-sections present emergency contacts, and procedures for medical emergency, fire response and spill prevention/response.

13.3.1 Emergency Contacts

The means to summon local public response agencies such as the police, fire, and ambulance, by dialing 911, shall be reviewed during each daily safety meeting.

Emergency contact information is provided in Table 13-1. General/federal/state contact is provided first; Malcolm Pirnie contact information is provided next; followed by contact information for South Plainfield, NJ.

TABLE 13-1: EMERGENCY CONTACTS

CONTACT	TELEPHONE NUMBER
GENERAL/FEDERAL/STATE	
Emergency Response (Fire, Police, Medical, etc.)	911
Poison Control Center	(800) 336-6997
National Response Center and Terrorist Hotline	(800) 424-8802
USACE Project Manager:	Ken Maas, (816) 389-3709
USEPA Project Manager (OU-1, OU-2, and OU-3):	Pete Mannino, (212) 637-4395
USEPA Project Manager (OU-4):	Mark Austin, (212) 637-3954
MALCOLM PIRNIE	
MPI Project Manager	Ed Dudek, (914) 641-2686
MPI Project Certified Industrial Hygienist (Contract)	Charles Myers, W: (914) 641-2610 C: (914) 484-7151
Health and Safety QA/QC Officer	Charles Myers, C: (914) 484-7151
New Jersey State Police	(609) 882-2000 (Headquarters, West Trenton) (973) 344-1704 (Newark)

CONTACT	TELEPHONE NUMBER
New Jersey Department of Environmental Protection	(877) 927-6337 (24-hour Emergency Control Center) (609) 292-3131 (General Information)
Port Authority of NY & NJ - Police, Central Police Desk	(973) 963-7111
CITY OF SOUTH PLAINFIELD	
Police Department	911 (Emergency) (908) 755-0700
Fire Department	911 (Emergency) (908) 756-4701

13.3.2 Medical Emergency

All employee injuries must be promptly reported to the FTL, who will:

- Verify that the injured employee receives prompt first aid and medical attention; and
- In emergency situations, the individual is to be transported by appropriate means to the nearest urgent care facility (normally a hospital emergency room).

Appendix D provides a summary of field team personnel who are trained in CPR/First Aid. Rescue and medical duties for project team members (*e.g.*, PSO, FTL) are discussed throughout the remainder of this section.

13.3.3 First Aid

All persons must report any near-miss incident, accident, injury, or illness to their immediate supervisor or the FTL. First aid will be provided by trained personnel. Injuries and illnesses requiring medical treatment must be documented. The FTL must conduct an accident investigation as soon as emergency conditions no longer exist and first-aid and/or medical treatment has

been administered. The report must be completed and submitted to the PSO and PCIH within 24 hours after the incident.

If first-aid treatment is required, first-aid kits kept at the field office will be used. If treatment beyond first aid is required, the injured should be transported to the nearest medical facility. If the injured person is not ambulatory, or shows any sign of not being in a comfortable and stable condition for transport, then an ambulance/paramedic should be summoned. If there is any doubt as to the injured worker's condition, it is best to let the ambulance service examine and transport the worker.

13.3.4 Emergency Care Steps

The steps listed below must be followed in the event of an emergency at the site.

Survey the scene. Determine if it is safe to proceed. Try to determine if the conditions that caused the incident are still a threat. Protect yourself from exposure before attempting to rescue the victim.

Do a primary survey of the victim. Check for **airway** obstruction, **breathing**, and **pulse**. Assess likely routes of chemical exposure by examining the eyes, mouth, nose, and skin of the victim for symptoms.

Phone Emergency Medical Services (EMS). Give the location, telephone number used, caller's name, what happened, number of victims, victims' condition, and help being given.

***If there are personnel on*-Site with appropriate training, the following can be performed as necessary:**

- Maintain airway and perform rescue breathing as necessary.
- ***Perform CPR*** as necessary.

- *Do a secondary survey of the victim.* Check vital signs and do a head-to-toe exam.
- ***Treat other conditions as necessary.*** If the victim can be moved, take him/her to a location away from the work area where EMS can gain access.

13.3.5 Inhalation

Any employee complaining of symptoms of chemical overexposure shall be removed from the work area and transported to the designated medical facility for examination and treatment.

13.3.6 Ingestion

Call EMS and consult a Poison Control Center for advice. If available, refer to the MSDS for treatment information, if recommended. If unconscious, keep the victim on his/her side and clear the airway if vomiting occurs.

13.3.7 Skin Contact

Personnel who have had skin contact with site constituents of potential concern will, unless the contact is severe, proceed through the decontamination zone to the wash-up area. Personnel must remove any contaminated clothing, and then flush the affected area with water for at least 15 minutes. The individual should be transported to the medical facility if he/she shows any sign of skin reddening or irritation, or if he/she requests a medical examination.

13.3.8 Eye Contact

Field personnel who have had site COCs splashed in their eyes or who have experienced eye irritation while in the contaminated zone must immediately proceed to the eyewash station, set up in the decontamination zone.

Do not decontaminate prior to using the eyewash. Remove whatever protective clothing is necessary to use the eyewash. Flush the eye with clean running

water for at least 15 minutes. Arrange prompt transport to the designated medical facility (see Section 13.4).

13.3.9 Fire/Explosion Response

In the case of a fire or explosion, the FTL shall notify local fire and police department (See Table 13-1), and other appropriate emergency response groups as necessary. Project personnel will attempt to extinguish the fire with available extinguishers, if safe to do so. In the event of a fire that project personnel are unable to safely extinguish, the local fire department shall be summoned. The FTL shall assess the situation and assist the local fire department if requested.

13.3.10 Spill Prevention/Response

This sub-section details requirements for activities to be performed to prevent, or if occurred, minimize the impacts from an accidental spill or other release of fuels, oils, or other hazardous materials brought on site during project activities.

In the event of an accidental release of a toxic or hazardous material, the employee observing the incident must immediately notify the FTL, and if possible, proceed to control the emergency situation. The FTL and the PSO will be notified if a spill occurs. The PSO will notify other appropriate emergency response groups and management as necessary. In the event of a significant release, the PSO (or designate) will contact the National Response Center. If required, the National Response Center will alert National or Regional Response Teams of the significant release. The PSO (or designate) will also determine whether an evacuation of the immediate areas is necessary and will announce that decision. Personnel should leave via the shortest route possible in a direction away from any potential danger.

The FTL or PSO must then immediately assess the hazard and identify the character and specific source of the spill. Most releases are expected to be minor and require only cleanup and disposal of small quantities of materials. If an IDLH atmosphere does not exist and adequate personal protective equipment is being used, the spread of any contamination is to be controlled whenever possible.

However, if there is an immediate threat to human health and the environment, evacuation and notification of additional authorities may be necessary (see Table 13-1 for emergency contact numbers). Additional appropriate authorities may include local police and fire departments, hospitals, and state and local emergency response teams.

Good judgment must be used in evacuation procedures to avoid placing people in greater danger. If no immediate threat exists, the FTL or PSO must continue to direct emergency response activities and document the following information:

- Name of the person reporting the incident;
- Location of the incident;
- Phone number where the person reporting the spill can be reached;
- Date, time, and location of the incident;
- A brief description of the incident;
- The estimated quantities of materials or wastes spilled;
- The extent of contamination of land, water, or air, if known;
- Action taken, or to be taken.

When determining the possible hazards to human health and/or the environment that may result from the incident, the FTL and PSO must consider both the direct and indirect effects of the release, assess the possible effects of any toxic, irritating, or asphyxiating gases that are generated, and determine the

effects of any hazardous run-off from water or chemical agents used to control fire and heat-induced explosions.

13.3.11 Spill Response Procedures

In the event of a release, the following steps will be taken by the person or persons noting the release:

- Notify the FTL immediately;
- Evacuate immediate area of release.

13.3.12 Spill Reporting Requirements

At a minimum, personnel reporting a spill or release must provide the following information to the FTL (using the Incident/Near-Miss Investigation Report provided as Appendix H):

- Location of the release or threatened release;
- The material released or threatened to be released;
- The approximate quantity and concentration of the release or threatened;
- Any other information as required for compliance with National Response Center (NRC) or NJDEP reporting requirements.

The FTL will then contact the appropriate PM and PCIH and notify them of the incident. The project manager or the PCIH will notify USACE and its representatives of the incident and determine if reports to the NRC or NJDEP are required.

13.3.13 Emergency Information

The means to summon local public response agencies such as police, fire, and ambulance will be reviewed in the daily safety meeting. Emergency contacts

are listed in Table 13-1. The following sub-sections provide information on medical emergencies and first aid while working at the site.

13.3.14 Spill Containment

The goal of spill control is to avoid spilling potentially hazardous liquids or solids at anytime, especially during transfer, transport or disposal of these materials. In the unlikely event that a spill occurs, the spill will be contained and cleaned up in accordance with applicable federal and state requirements including 29 CFR 1910.120(j).

The following specific steps are to be taken to avoid spill control/containment if needed:

- Drums and containers will be labeled indicating their contents and origin.
- Drums will be inspected prior to moving to ensure their integrity.
- The amount of drum movement will be minimized to the extent practical.
- Appropriate personal protective equipment will be used when cleaning up spills.
- If liquids are spilled, they will be contained with contents and placed in drums. Spilled soils or liquids spilled on soils will be placed in drums for future disposal.

13.4 HOSPITAL LOCATIONS AND DIRECTIONS

Each of the hospitals listed in Table 13-2 has emergency room and parking facilities. Hospital Directions are provided as Appendix I.

TABLE 13-2: HOSPITALS IN VICINITY OF CORNELL-DUBILIER SITE

Hospital	Telephone
JFK Medical Center 65 James Street Edison, NJ 08818	(732) 321-7000
Muhlenberg Medical Center 1200 Randolph Road, Plainfield, NJ	(908) 668-2200

13.5 PERSONNEL ROLES, LINES OF AUTHORITY, COMMUNICATION

[Note: The USEPA and USACE are currently managing remedial action (RA) at OU-2. Accordingly, all site operations must be coordinated through USEPA, USACE, and the RA contractor to ensure that all communications are properly defined.]

The PSO is the primary authority for directing operations at the Site under emergency conditions. Roles and responsibilities of safety personnel for the project are defined in the QAPP for each OU. Malcolm Pirnie personnel who have health and safety responsibility for this project are summarized in Tables A3-1, B3-1, B3-2, B3-3, C3-1, and D3-1 of Attachments A through D for OU-1 through OU-4, respectively.

Telephones/Radios

Telephones, portable radios, and hand signals will be used at the Site for communication. Cellular phones will be provided for each team working in the field. At least one member of each team is required to have one of these phones with them at all times.

Hand Signals

Hand signals will be employed by downrange field teams along with utilizing the buddy system. These signals (Table 13-3) are also very important when working with heavy equipment. The entire field team shall know them before operations commence and covered during site-specific training prior to fieldwork.

TABLE 13-3: HAND SIGNALS AND MEANINGS

HAND SIGNAL	MEANING
Hand gripping throat	"CAN'T BREATHE"
Grip wrist or both hands around waist	"LEAVE AREA IMMEDIATELY"
Hands on top of head	"NEED ASSISTANCE"
Thumbs up	"OK, I AM ALL RIGHT, I UNDERSTAND"
Thumbs down	"NO, NEGATIVE"

13.6 REPORTING ACCIDENTS, INJURIES, ILLNESSES, AND NEAR-MISS INCIDENTS

All injuries and illnesses, however minor, shall be reported to the FTL immediately. The FTL shall complete an Incident/Near-Miss Investigation Report (Appendix H) and submit it to the PSO, the PCIH, and the USACE within 24 hours.

Near-miss incidents are situations in which no injury or property damage occurred, but under slightly different circumstances an injury or property damage could have occurred. Near misses are caused by the same factors as injuries; therefore, they must be reported on the Incident/Near-Miss Investigation Report (Appendix H) and investigated in the same manner.

An accident that appears to have any of the consequences listed below shall be immediately reported to the USACE. These accidents will be investigated in depth to identify all causes and to recommend hazard control measures.

a. Fatal injury
b. Permanent totally disabling injury
c. Permanent partial disabling injury
d. Three or more persons admitted to a hospital, or
e. Property damage in an amount specified by USACE current accident reporting regulations.

Except for rescue and emergency measures, the accident scene shall not be disturbed until it has been released by the investigating official.

13.7 EVACUATION PROCEDURES AND SAFE DISTANCES

Evacuation procedures will occur at one level: (1) Site evacuation. If site evacuation is required, all field team members will be notified by cellular phone. Anticipated conditions that require this response are described in the following subsections.

Site Evacuation

Evacuation of the Site will be required when:

- A fire or major accident occurs; or
- An explosion is imminent or has occurred.

After determining that Site evacuation is warranted, the work crew will proceed outside of site-building and notify the PSO of site conditions. As more facts are determined from the field crew, they will be relayed to the appropriate agencies. The advisability and type of further response action will be coordinated and implemented by the PSO.

13.8 SITE SECURITY AND CONTROL

As stated in Section 9.0, access of non-essential personnel to the Work Zone will be controlled. Only personnel who are essential to the completion of the task and wearing the prescribed level of protection will be allowed access to these

areas. Entrance of non-contractor or subcontractor personnel must be approved by the PSO based on that person's documentation of training described in Section 6.0.

13.9 EMERGENCY RESPONSE EVALUATION

In the aftermath of an emergency, before normal Site activities are resumed, personnel will be prepared and fully equipped to handle another emergency. The PSO will be responsible for restocking emergency supplies, replacing or repairing damaged equipment. The Project Manager will notify appropriate government agencies as required. This includes OSHA if there has been a fatality or if five or more workers have been hospitalized.

The Project Manager and Health and Safety Manager are responsible for initiating an investigation and documenting the incident. This investigation will be designed to develop information about the institutional, organizational, technical, and operational root causes of the accident or injury. Documentation will include the completion of the Malcolm Pirnie Supervisor's Incident Investigation Report and the following:

- A chronological history of the incident;
- Facts about the incident and when they became available;
- Title and names of involved personnel;
- Decisions made, orders given – to whom, by whom and when;
- Actions taken: who did what, when, where, and how;
- Environmental measurements;
- Potential exposures of Site personnel; and
- History of all injuries or illnesses during or as a result of the incident.

Before Site work resumes, a meeting will be held to review and revise all aspects of the SSHP according to new Site conditions, cleanup and/or other additional tasks required as a result of the incident, and lessons learned from the emergency response. This meeting will be attended by the PM, the PCIH, the

Field Team Leader, the PSO, representatives of partner firms whose operations or tasks were or could be impacted by the incident, and by representatives of any and all contractors whose operations or tasks were or could be impacted by the incident. The purpose of the meeting will be to:

- Review the incident and unsafe conditions and/or act that resulted in the incident.
- Determine if and how these conditions or acts were preventable.
- Replace, or correct procedures that failed to result in desirable responses or activities.
- Determine if the incident has changed the Site profile and where and what that impact might be.

The result of the meeting will be:

- The generation of a series of action items which must be satisfactorily completed prior to the re-initiation of the Site activities.
- Developing, if required, appropriate changes to this SSHP.
- Retraining Site personnel in the changes to this SSHP.

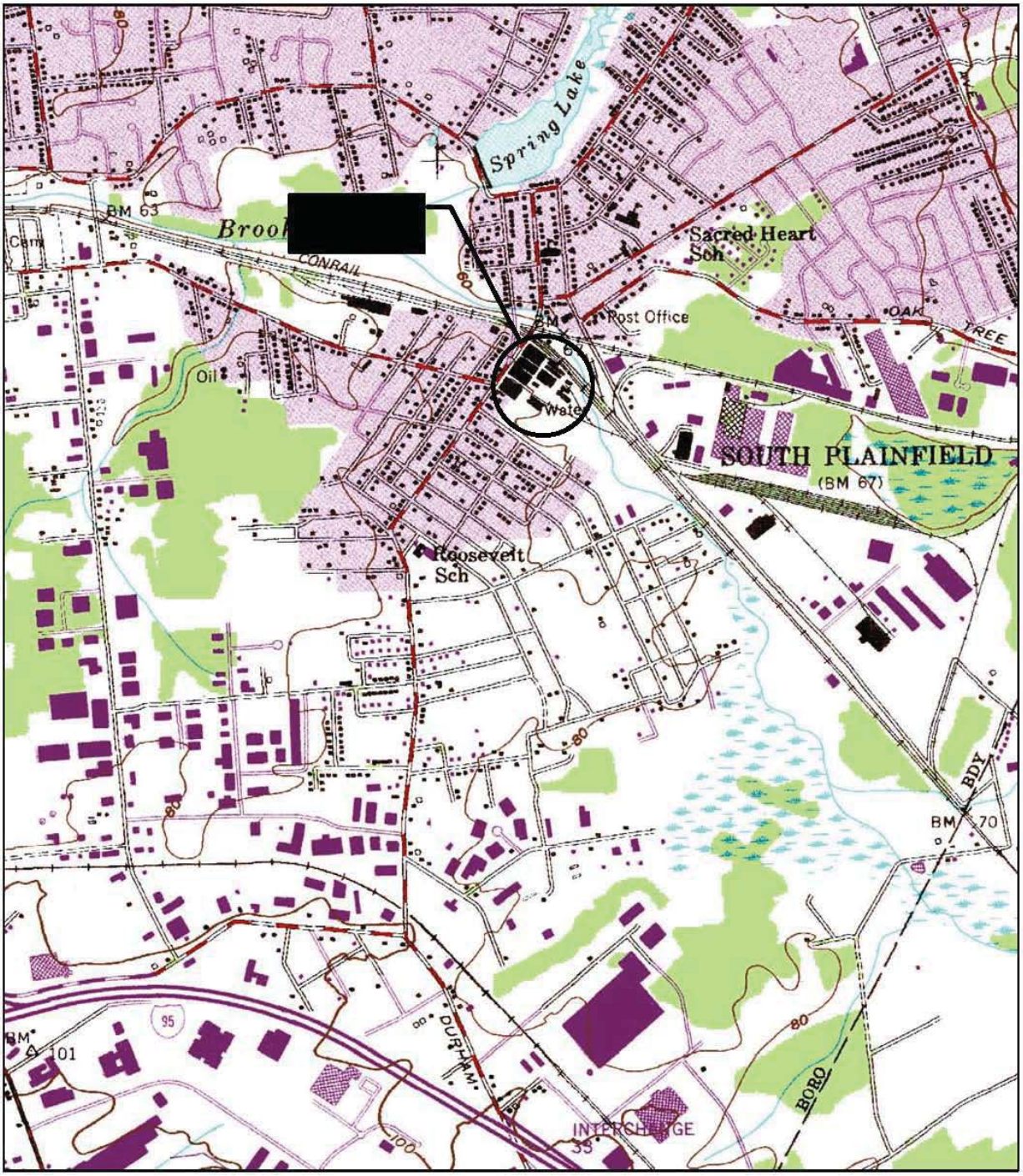
14.0 ABBREVIATIONS AND ACRONYMS

ACM	Asbestos Containing Material
CLP	Contract Laboratory Program
COPC	Constituents of Potential Concern
COC	Chain-of-custody
DESA	Division of Environmental Science and Assessment
DCE	Dichloroethene
DCSCC	Direct Contact for Soil Cleanup Criteria
DI	Deionized
DOT	United States Department of Transportation
DPM	Deputy Project Manager
DQO	Data Quality Objective
EPA	United States Environmental Protection Agency
FID	Flame Ionization Detector
FS	Feasibility Study
FSP	Field Sampling Plan
FTL	Field Team Leader
GC/MS	Gas Chromatography/Mass Spectrometry
GIS	Geographic Information System
GPS	Global Positioning System
ID	Inner Diameter
IDW	Investigative Derived Waste
IGWSCC	Impact to Groundwater for Soil Cleanup Criteria
LBP	Lead Based Paint
LTTD	Low Temperature Thermal Desorption
MCL	Maximum Contaminant Level
MDC	Maximum Detected Concentration
MDL	Method Detection Limit
mg/kg	Milligrams Per Kilogram
msl	Mean Sea Level

NJDEP	New Jersey Department of Environmental Protection
NJSHPO	New Jersey State Historic Preservation Office
OD	Outer Diameter
OU-1	Operable Unit 1
OU-2	Operable Unit 2
OU-3	Operable Unit 3
OU-4	Operable Unit 4
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PCE	Tetrachloroethane
PCIH	Project Certified Industrial Hygienist
pg/g	Picograms per Gram
PID	Photoionization Detector
PM	Project Manager
PPC	Pocket PC
PPE	Personal Protective Equipment
ppm	Parts per Million
PQL	Practical Quantitation Limit
PSO	Project Safety Officer
PVC	Polyvinyl chloride
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
QC	Quality Control
RAOs	Remedial Action Objectives
RI	Remedial Investigation
ROD	Record of Decision
SOP	Standard Operating Procedure
SOW	Statement of Work
SSHP	Site Safety and Health Plan
TCA	Trichloroethane
TCDD	Tetra-dioxin

TCE	Trichloroethylene
TCL	Target Compound List
TOC	Total Organic Carbon
TSCA	Toxic Substances Control Act
TSDF	Treatment, Storage, or Disposal Facility
ug/L	Micrograms Per Liter
ug/kg	Micrograms Per Kilogram
ug/m^3	Micrograms Per Cubic Meter
um	Micrometers

FIGURES



SOURCE: U.S.G.S. TOPOGRAPHIC MAP,
7.5 MINUTE SERIES, PLAINFIELD, NEW JERSEY
QUADRANGLE, 1955, PHOTOREVISED 1981

REF:

MALCOLM PIRNIE	U.S. ARMY CORPS OF ENGINEERS CORNELL-DUBILIER SUPERFUND SITE SOUTH PLAINFIELD, NJ CONTRACT: W912DQ-06-D-0006	SITE LOCATION MAP SCALE AS NOTED	MALCOLM PIRNIE, INC. JULY 2008 FIGURE 1

APPENDIX A

HEALTH & SAFETY PROGRAM

Malcolm Pirnie has a very progressive and integrated Health & Safety Program. The program emphasizes employee responsibility, participation, and training. Malcolm Pirnie offers all types of health and safety training including new employee orientation, all relevant HAZWOPER courses, confined space entry, construction safety, first aid/CPR, and respiratory protection. We have recently added UXO (Unexploded Ordnances) and IATA training to our comprehensive list of training courses offered. Employees are often introduced to the program during the required post-offer and annual physical examination that is a part of our medical surveillance program. A measure of the program's success is our low accident and injury rates, well below industry averages.

Firm Health & Safety Operating Philosophy

Malcolm Pirnie is committed to providing a safe and healthful workplace, free of recognized hazards. In turn, employees are expected to be alert to health and safety hazards in their work environments, take appropriate precautions to avoid or control workplace hazards, wear personal protective equipment suitable for the exposure, comply with all company and health and safety policies and programs, and perform their work in a safe manner. This multi-level responsibility is applied to each project we perform by having the corporate health and safety officer, the project manager, the project safety officer, and all project staff read and sign-off on the cover page of all health and safety plans.

Malcolm Pirnie is also committed to conducting its operations according to applicable federal, state and local health and safety standards, regulations and laws, such as those of the Federal Department of Labor, the Occupational Health and Safety Administration, and the United States Environmental Protection Agency. Project Teams must plan and conduct their work activities in a responsible manner that reflects commitment to their personal well-being, that of our clients, and the general public. Project staff must be current with the health and safety training and medical monitoring requirements consistent with their discipline and availability for field activities.

Ignoring or violating occupational health and safety regulations or policies may have severe personal and business consequences. An employee found to have violated these policies may be subject to disciplinary action up to and including termination of employment.

The effectiveness of Malcolm Pirnie's Health and Safety Program is demonstrated by its occupational injury and illness statistics. Malcolm Pirnie's 2007 Incident Rate is .60 compared to an industry average of 1.5 in 2006. Malcolm Pirnie's 2007 Lost Work Day Incident Rate is .16 as compared to an industry average of .50 for 2006. Malcolm Pirnie has earned a three-year average 2006-2008 Interstate Experience Modification Rate of .70.

Malcolm Pirnie has never been subject to a federal or state OSHA final order or a citation from the USEPA or USDOT.

Responsible Program Personnel

Malcolm Pirnie maintains a comprehensive Health & Safety Program in accordance with OSHA 29 CFR 1910 and USDOT 49 CFR. The Health & Safety Group consists of the following professionals:

Charles Myers, Corporate Director of Environmental Health and Safety, CIH, CHMM, CPEA, has over 30 years experience in the integration of environmental health and safety (EH&S) programs into complex environmental remediation and construction project management. He has experience in anticipating, evaluating, and recommending the control of hazards for federal, state, municipal, industrial, construction, and commercial clients. His experience also includes air and noise exposure monitoring, health and safety plan development, regulatory compliance program development, loss control surveys, and employee and environmental health and safety (EH&S) training. In addition, he has developed Spill Prevention, Control and Countermeasure (SPCC) plans and contingency plans, as well as designed and managed indoor air quality projects, mold surveys and remediation, and other EH&S management solutions.

Ms. Laura Lee-Casey, CSP, CHST, EMP-T, Construction Safety Manager, has in excess of 15 years experience in the occupational safety. Her work experience includes heavy highway and major municipal site construction projects as a safety director and risk manager. She also experience in a wide variety of environmental remediation projects.

Assisting with the implementation and maintenance of the Corporate Environmental Health and Safety Program is a national network of over 50 site and office Health and Safety Coordinators (HSCs).

Medical Monitoring Program

A Medical Monitoring Program addresses the effects of toxic chemicals or harmful physical agents on individual workers and verifies the effectiveness of environmental controls. Malcolm Pirnie, in compliance with Occupational Safety and Health Administration (OSHA) regulations, requires medical monitoring for workers exposed to asbestos, noise and lead, radiation, and for those who work on hazardous waste operations sites. OSHA regulations further require that a physician evaluate employees to determine their fitness to wear respiratory protection.

The medical surveillance program is administered by the Board Certified Occupational Physicians at Health Resources Corporation, Woburn, MA.

Malcolm Pirnie's Medical Monitoring Program represents one aspect of the company's on-going commitment to provide a safe and healthful workplace, and to conduct its operations following applicable health and safety standards including those of the Federal Department of Labor/OSHA, the United States Environmental Protection Agency (USEPA), and other federal, state and local agencies.

Full-time, part-time, temporary and summer employees must participate in the Malcolm Pirnie Medical Monitoring Program if they meet the following criteria:

- Assigned to work on a hazardous waste site(s).
- Assigned to work on corrective actions taken at treatment, storage and disposal facilities regulated by 40 CFR (Code of Federal Regulations) Parts 264 and 265, the Resource Conservation and Recovery Act of 1976 (RCRA), or by other agencies under agreement with the USEPA.
- Potential exposure to chemical, biological or physical agents.
- Assigned to projects that may require the use of certain personal protective equipment e.g., respirators.
- Potential assignment to work on sites for which OSHA has issued regulations containing applicable medical monitoring provisions.
- Potential exposure to biological agents or infectious material as defined in the Bloodborne Pathogens Standard (29 CFR 1910.1030).

Training and Refresher Programs

Health and Safety Training provide employees with the knowledge, motivation and skills necessary to perform tasks in a way that protects them, the public, and property. The Occupational Health and Safety Administration (OSHA) requires specific health and safety training for workers exposed to lead, noise, asbestos, bloodborne pathogens and hazardous chemicals. Employees assigned to hazardous waste operations or those working in confined spaces, laboratories, or in proximity to electrical energy or other systems that could unexpectedly release stored energy also receive training. Employees, who use personal protective equipment, including respirators and hearing protectors, also are trained in the proper use and the limitations of this equipment.

Malcolm Pirnie's Health and Safety Training Program represents one aspect of the company's on-going commitment to provide its employees with a safe and healthful work place, and to conduct its operations following applicable federal, state and local health and safety standards, regulations and laws.

The objectives of the Health and Safety Training Program include:

- developing staff awareness of work place hazards encountered on the job;
- providing staff members with the knowledge and skills required to safely perform work tasks with the least risk to themselves and others;
- educating staff members on the purpose and limitations of safety and protective equipment; and
- training employees in hazard anticipation, recognition, evaluation, and control.

Malcolm Pirnie offers employees and clients a wide variety of individual training courses required by OSHA, USDOT and USEPA including 8-hour HAZWOPER refresher and Supervisors training.

Malcolm Pirnie provides Health and Safety Training to eligible full-time, part-time, temporary and summer employees. Individual Health and Safety Training requirements vary according to an employee's work assignment(s) and job description.

EMERGENCY AND DECONTAMINATION PROCEDURES

Emergency Action Plan and Procedures

Emergencies can and will occur, and when they do occur, site personnel must be prepared to respond to prevent or reduce the effect of the incident on employees, property, the general public and the environment. To accomplish this, a well-coordinated emergency management plan must be in place that incorporates various interactive tasks necessary for containment or mitigation during events such as chemical releases, oil spills, fires, explosions and natural disasters.

Malcolm Pirnie prepares all emergency action plans to meet requirements of 29 CFR 1910.20 and 1910.38 of the OSHA regulations.

Decontamination Procedures

We utilize a decontamination procedure schedule as specified in the 4-agency document *OSHA Guidance Manual for Hazardous Waste Site Activities* published by NIOSH, OSHA, USCG and USEPA.

Site-Specific Health and Safety Information

Malcolm Pirnie routinely prepares Site Safety and Health Plans (SSHP) to address health and safety requirements for Malcolm Pirnie employees and subcontractors conducting site activities in compliance with OSHA 29 CFR 1910.120. This overall SSHP describes in detail the requirements and procedures for Malcolm Pirnie employee protection for the various site tasks. Subcontractors are required to develop site-specific safety and health plans which, at a minimum, contain the provisions and restrictions set out in the general SSHP. In addition, subcontractor plans contain hazard evaluation and hazard control methods specific to their tasks on site. These plans, in combination with the general SSHP, are submitted to the client prior to commencement of site activities.

Safety, health and emergency response procedures are outlined for preventing accidents and protecting personnel from injury and occupational illness during site activities. Included in this SSHP are the assignment of responsibilities, personnel protection minimum requirements, safe work practices and emergency response procedures. The document is developed based upon available historical information and the assessment of potential physical and chemical hazards associated with the site and activities. A copy of this SSHP will be available on-site. Compliance with this SSHP is required of all project personnel and visitors who enter the site.

The procedures outlined in the SSHP comply with the Occupational Safety and Health Administration (OSHA) requirements contained in 29 CFR 1910 including the final rule contained in 29 CFR 1910.120. The procedures are also consistent with the guidance contained in the Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities jointly prepared by the USEPA, National Institute for Occupational Safety and Health (NIOSH), OSHA, the U.S. Coast Guard (USCG) and USEPA's Standard Operating Safety Guides.

1.0 Background Information

The scope of the services to be provided includes data collection for the purposes of contaminant delineation at OU-1 properties adjacent to the Cornell-Dubilier Site. The scope of services includes the following sampling programs:

- Shallow soil sampling
- Indoor dust sampling

2.0 Malcolm Pirnie Health & Safety Policy

Malcolm Pirnie is committed to providing a safe and healthful work place, free of recognized hazards, and to conduct its operations in accordance with applicable federal, state, and local environmental, health and safety standards, regulations and laws including those of the U. S. Department of Labor, Occupational Health and Safety Administration (OSHA), the U. S. Environmental Protection Agency (EPA), and U. S. Department of Transportation (DOT).

Malcolm Pirnie expects that all employees will plan and conduct their work activities in a responsible and safe manner that reflects this commitment to their personal well-being, that of our clients, and of the general public.

Malcolm Pirnie will provide appropriate safety equipment and training to employees to eliminate or reduce exposure to safety and health hazards.

Malcolm Pirnie staff will promptly report to the Manager of Corporate Health & Safety (914 641-2484) and the General Counsel (914 614-2950) all serious incidents, accidents, injuries and property damage that involve Malcolm Pirnie, the client, or contractor employees, which occur during the execution of their projects.

Failure to comply with Malcolm Pirnie's Health & Safety Policies, Procedures or Programs may result in disciplinary action, up to and including termination of employment.

3.0 Responsibilities and Lines of Authority

Project Officer

The Project Officer (PO) is ultimately responsible for project performance. The PO seeks and gets appropriate approvals for risk management decisions (e.g. from Regional/Practice Director(s), Legal Council, Corporate Health and Safety), and selects and effective and qualified project team. The PO supports the Project Manager or Deputy Project Manager with appropriate resources.

Project Manager

The Project Manager (PM) has the responsibility for executing the project in accordance with the scope of work and good engineering practice. The PM will supervise the allocation of resources and staff to implement specific aspects of this HASP and may delegate authority to expedite and facilitate any application of the program. The PM implements and executes an effective program of site-specific personnel protection and accident prevention. The Project Manager reports to the Project Officer.

Deputy Project Managers (DPM) are assigned all duties and responsibilities of the Site Safety Officer in his/her absence.

Corporate Health and Safety

Corporate Health and Safety is responsible for Malcolm Pirnie's overall Health and Safety Program and provides project guidance on air monitoring methodology, data interpretation and assistance in determining appropriate project engineering controls, work practices, and personal protective equipment. Corporate Health and Safety also reviews and approve HASPs.

Project Safety Officer

The Project Safety Officer (PSO) is responsible for interpreting and implementing the site health and safety provisions set out in this HASP, and will guide the efforts of field team personnel in their day-to-day compliance with this HASP. The PSO has the ability and authority to make necessary changes or additions to this HASP and provide technical assistance to field team personnel on problems relating to worksite safety. The PSO has the authority to correct safety-related deficiencies in materials or practice and to call a Project STOP in the most serious cases.

Alternate Project Safety Officer (APSO) is assigned all duties and responsibilities of the Site Safety Officer in his/her absence.

Public Information Officer

The Public Information Officer (PIO) is responsible for all public, press and other news media request for information, and is the only person authorized to provide such information

Site Record Keeper

The Site Record Keeper is responsible for the documentation of all related heath and safety data documentation, including but not limited to metrological data, instrument calibration, accident and injury reports, and air monitoring data.

Field Team Leader

The Field Team Leader (FTL) is responsible for leading on-site activities of field team personnel, and to ensure field team personnel perform tasks according to the means and methods specified in the HASP.

Field Personnel

Field personnel have the following health and safety responsibilities:

- Implement the procedures set forth in the HASP;
- Take all reasonable precautions to prevent injury to themselves and their fellow employees; and
- Perform only those tasks that they believe they can do safely, and immediately report any accidents and/or unsafe conditions.

4.0 Subcontractors and Suppliers

Employers who become subcontractors and suppliers to Malcolm Pirnie during this Program will be selected, in part, on the basis of their previous Health & Safety performance record. These firms will have to submit as part of the bid package, information detailing their OSHA Recordable Accidents, Accidents Resulting in Lost Time, and their EMR for the past 4 years. This data will be reviewed by the Corporate Health & Safety Manager who will evaluate the data and make recommendations to the selection team.

Employers who become subcontractors and suppliers to Malcolm Pirnie during this Program will be responsible for the safety of their employees and second-tier subcontractors, if any, and will be responsible for the safety of the ENGINEER'S employees and the USACE employees while they are in areas controlled by that employer. Employers who become subcontractors and suppliers to Malcolm Pirnie during this Program and whose operations, tasks and hazards are substantially similar to those developed in Malcolm Pirnie's Task Safety Plan, may use Malcolm Pirnie's Plan under the following conditions.

Each Employer shall:

- Develop their own Health and Safety Program, including a written Hazard Communication Program and any other written hazard specific or safety programs required by federal, state and local laws and regulations, that addresses hazards and controls typically encountered in the subcontractor's line of work;
- Provide required personal protective equipment for their own employees and guests;
- Provide documentation that their employees have been health and safety trained in accordance with applicable federal, state and local laws and regulations;
- Provide evidence of required medical surveillance and medical approvals for their employees; and,
- Designate their own site safety officer responsible for ensuring that their employees comply with their own Health and Safety Program and taking any other additional measures required by their site activities.

Providing a copy of Malcolm Pirnie's Safety Plan to subcontractors or suppliers, does not establish, nor is it intended to establish a "joint employer" relationship between the Contractor and Malcolm Pirnie. This allowance does not establish, nor is it intended to

establish, a direct or indirect employer/employee relationship with subcontractor's employees.

Employers who become subcontractors and suppliers to Malcolm Pirnie during this Program and whose operations, tasks and hazards are substantially different from those developed in Malcolm Pirnie's Task Safety Plan, may not rely on Malcolm Pirnie's Safety Plan and must meet the following conditions:

- Develop their own Site Specific Health and Safety Program, including a written Hazard Communication Program and any other written hazard specific or safety programs required by federal, state and local laws and regulations.
- Develop their own Task Specific Safety Plan, in accordance with USACE EM 385-1-1, current edition, including the details of subcontractor tasks, potential or actual hazards identified as a result of a risk analysis of those tasks, and the engineering controls, work practices and personal protective equipment to be utilized to minimize or eliminate employee exposure to the hazard;
- Provide personal protective equipment for their own employees and guests;
- Provide documentation that their employees have been health and safety trained in accordance with applicable federal, state and local laws and regulations;
- Provide evidence of medical surveillance and medical approvals for their employees; and,
- Designate their own appropriately trained, site safety officer responsible for ensuring that their employees comply with their own Health and Safety Program and taking any other additional measures required by their site activities.

5.0 Training

Introduction

Health and Safety Training provides employees with the knowledge, motivation and skills necessary to perform tasks in a manner that protects them, the public, and property. The Occupational Health and Safety Administration (OSHA) requires specific health and safety training for workers exposed to lead, noise, asbestos, bloodborne pathogens and hazardous chemicals. Employees assigned to hazardous waste operations or those working in confined spaces, laboratories, or in proximity to electrical energy or other systems that could unexpectedly release stored energy also must receive training. Employees, who use personal protective equipment including respirators and hearing protectors, also must be trained in the proper use and the limitations of this equipment.

Malcolm Pirnie's Health and Safety Training Program represents one aspect of the company's on-going commitment to provide its employees with a safe and healthful work place, and to conduct its operations following applicable federal, state and local health and safety standards, regulations and laws. For further information on any aspect of Malcolm Pirnie's Health and Safety Training Program, contact the Manager of Corporate Health and Safety, WHI.

Objectives
The objectives of the Health and Safety Training Program include:

- Developing staff awareness of work place hazards encountered on the job;
- Providing staff members with the knowledge and skills required to perform work tasks with the least risk to themselves and others;
- Educating staff members on the purpose and limitations of safety and protective equipment; and,
- Training employees in ways to avoid or escape from threats to their personal well being.

Malcolm Pirnie provides Health and Safety Training to eligible full-time, part-time, temporary and summer employees. Individual Health and Safety Training requirements vary according to an employee's work assignment(s) and job description.

Health & Safety Training Responsibilities
The Manager of Corporate Health and Safety, WHI, is responsible for evaluating company-wide Health and Safety technical and regulatory compliance issues. This individual:

- Evaluates regulatory requirements and develops Health and Safety Training policies and procedures based on an analysis of work place exposures;
- Selects, reviews, and evaluates Health and Safety Training vendors for quality, cost, and consistency with established Health and Safety Training objectives; and,
- Coordinates the development and presentation of special training programs.
- The Training Administrator, Health and Safety, WHI, is responsible for maintaining training records and coordinating Health and Safety functions. This individual:
- Reviews and updates the Health and Safety Training database;
- Notifies Health and Safety Coordinators when training should be scheduled;
- Assists in scheduling training sessions; and,
- Issues quarterly Health and Safety Training Reports.

Most company locations have one or more designated Health and Safety Coordinators. These individuals are responsible for:

- Scheduling training required for Program participants;
- Providing project managers and supervisors with necessary training, medical and fit test documentation; and,
- Maintaining Health and Safety Training files for employees at their location.

Managers, supervisors and field team leaders are responsible for staffing their projects with appropriately trained staff. Managers and supervisors are also responsible for seeing that staff members reporting to them receive and maintain Health and Safety Training appropriate for their project assignments.

BASIC SAFETY AWARENESS TRAINING
During the first six months of employment, staff members must attend a Basic Safety Awareness presentation as part of new employee orientation. The components of this training include:

- An overview of Malcolm Pirnie's Health and Safety procedures and programs;
- Basic office safety, including office ergonomics; and,
- Hazard Communication Training.

Basic Safety Awareness presentations are provided by Corporate Health and Safety at least three times each year.

HAZARDOUS WASTE OPERATIONS TRAINING

OSHA regulations require that employees who meet the following criteria participate in a 40 hour Hazardous Waste Operations (HAZWOPER) Training:

- Employees assigned to work at a hazardous waste site(s);
- Employees assigned to work on corrective actions taken at treatment, storage and disposal facilities regulated by 40 CFR (Code of Federal Regulations) Parts 264 and 265, The Resource Conservation and Recovery Act of 1976 (RCRA), or by other agencies under agreement with United States Environmental Protection Agency (USEPA);
- Employees who, as part of their work responsibilities, may be exposed to chemicals, biological or physical agents, or use personal protective equipment or who may be assigned to work at sites for which OSHA has issued regulations containing applicable health and safety provisions; and,
- Employees scheduled to begin any project or task(s) for which Health and Safety Training is required.

If an employee is to be assigned tasks that include working in a containment ("hot") zone or wearing personal protective equipment at Level C or above, s/he is required to complete a minimum of 40-hours of initial off-site Hazardous Waste Operations instruction before starting the assignment. The content of this training normally includes:

- Chemical, physical and toxicological hazards of hazardous wastes.
- Site characterization, hazard detection and analysis.
- Site operation and control practices and procedures.
- Emergency preparedness.
- Personal protective equipment/work practices.
- Respiratory protection principles (workshop field exercise).
- Monitoring instruments/use, maintenance and calibration.
- Engineering controls and equipment.
- Medical monitoring/recognition of symptoms.
- Problem resolution/case studies.
- Decontamination procedures.

There is an eight hour Annual Refresher Training requirement for this training.

In addition to 40-hours of initial off-site instruction, employees will complete and document at least 24-hours of actual Hazardous Waste Operations field training under the direct supervision of a trained, experienced supervisor. This field training develops the

individual's ability to safely perform his/her assigned tasks at a specific level (A, B or C) of protection.

Exemption by Prior Experience or Training
New employees may request exemption from Hazardous Waste Operations Training if their previous work experience or training is equivalent to the initial training requirement described in 29 CFR 1910.120(e). Employees applying for a Hazardous Waste Training Exemption should contact the Training Administrator, Health and Safety, WHI, to receive a Health and Safety Equivalent Training Questionnaire form. The completed form should be sent to the Manager of Corporate Health and Safety, WHI, for review and approval. If approved, copies will be returned to the employee and the local Health and Safety Coordinator for inclusion in the employee's Health and Safety file.

Current employees interested in obtaining an exemption also must complete a Health and Safety Equivalent Training Questionnaire form and send it to the Manager of Corporate Health and Safety, WHI, for processing.

Hazardous Waste Operations Annual Refresher Training
Employees who want to remain available for Hazardous Waste assignments will update their 40-hour training by attending an eight-hour refresher course every 12 months. This training reinforces their initial training, and introduces new regulations, policies and procedures. Employees cannot be assigned hazardous waste site work until they satisfy this Annual Refresher Training requirement. Employees who have not taken Annual Refresher Training for more than two years after their due-date must repeat the 40-hour training course before being assigned Hazardous Waste Site Work.

Hazardous Waste Training for Site Managers, Field Team Leaders and Supervisors
Officers, Associates and other employees who function as site managers, field team leaders and supervisors must complete eight hours of Hazardous Waste Training for Supervisors. This training emphasizes informed decision-making in the field. Employees assigned to work as the only Malcolm Pirnie employee on a hazardous waste site must also complete this training. Instructors may be in-house, or qualified, approved training vendors. The content of this training normally includes:

- Health and Safety Planning.
- Hazard Review.
- Site Emergencies.
- Emergency Response Planning.
- Container Handling.
- Monitoring.

There is no Annual Refresher Training requirement for Hazardous Waste Training for Site Managers, Field Team Leaders and Supervisors.

CPR / FIRST AID / BBP TRAINING
Cardiopulmonary Resuscitation (CPR)/First Aid Training

This classroom training provides employees with the skills needed to respond to medical emergencies. OSHA requires that at least one person certified for CPR/First Aid be present on any site that is not immediately accessible (within four minutes) to healthcare services.

Site-active employees with 40-hour Hazardous Waste Operations training must maintain their CPR/First Aid Certification by taking a biannual CPR/First Aid Refresher course. Local Health and Safety Coordinators arrange CPR/First Aid training sessions through the American Heart Association or a similar qualified, approved training vendor.

Bloodborne Pathogens Exposure Control Training

Bloodborne Pathogens Exposure Control training is available as part of the CPR/First Aid training or as a separate course. Employees who are certified in CPR/First Aid are required to complete this training to comply with the applicable provisions of the OSHA Occupational Exposure to Bloodborne Pathogens Standard (29 CFR 1910.1030,) described in the Health & Safety manual. Employees who are not CPR/First Aid certified but who may be exposed to Bloodborne Pathogens during their assignments are also required to complete this training.

The content of Bloodborne Pathogens Exposure Control training normally includes:

- Introduction to the Bloodborne Pathogens Standard.
- Definitions.
- Bloodborne Diseases.
- Worksites with potential exposure.
- Universal Precautions.
- Malcolm Pirnie's Bloodborne Pathogens Exposure Control Program.
- What to do if an Exposure Incident occurs.

There is an Annual Refresher Training requirement for this training.

SPECIALIZED HEALTH & SAFETY TRAINING

Construction Safety Awareness Training

Presented by the Construction Management Group, WHI, this instruction provides employees with an awareness of health and safety hazards typically encountered on a construction site. Employees develop a general awareness of the OSHA Construction Industry regulations (29 CFR 1926) and learn the types, uses and limitations of safety equipment appropriate to a construction site.

Employees are required to complete this training if they work on or visit construction sites, hazardous waste sites, landfill closures, and similar sites where they may be exposed to construction hazards.

Confined Space Entry Training

Through specialized classroom and field instruction, employees will learn the proper procedures for entering sewers, tanks and other confined spaces. All Malcolm Pirnie employees who plan to work in or to supervise others working in confined spaces shall

complete Confined Space Entry Training before starting field activities. Contact your Supervisor or the Training Administrator, Health and Safety, WHI, for more information.

Hearing Conservation Training

Specialized classroom instruction on the dangers of noise, this course teaches employees about the proper equipment and procedures to use when working for prolonged periods in high noise (over 85 dBA) environments. OSHA requires this training in anticipation of exposure to high noise levels, and if an employee has been diagnosed as having an occupational hearing loss.

Lock-out / Tag-out Training

Specialized instruction informs employees on methods and procedures for recognizing and controlling sources of stored electrical, mechanical, hydraulic, pneumatic, chemical, thermal, and other energy that can cause injury if released. Malcolm Pirnie employees who conduct equipment or facility inspections should be familiar with lock-out/tag-out procedures.

Chemical Hygiene Training
Specialized instruction for employees working at process monitoring laboratories on Malcolm Pirnie projects. This training educates laboratory employees in methods and observations that may be used to detect the presence or release of a hazardous chemical(s), the physical and health hazards of chemicals in the work area, as well as measures employees can take to protect themselves from these hazards, including procedures Malcolm Pirnie implements to protect employees from exposure to hazardous chemicals.

Project-specific Hazard Communication Training
Specialized, project-specific instruction for employees assigned to a project that would require them to use or be exposed to hazardous chemicals. The instruction includes methods and observations for employees to detect the presence or release of a hazardous chemical(s), the physical and health hazards of chemicals in the work area plus measures employees can take to protect themselves from these hazards. Employees will be instructed in procedures Malcolm Pirnie implements to protect them from exposure to hazardous chemicals.

TRAINING - HEALTH & SAFETY FILES / RECORDS RETENTION
Health and Safety Coordinators will maintain current, accurate documentation in a file created for each Program Participant at their location. Depending on the training the Participant receives, the files should contain:

- Initial 40-Hour Training Certificates: to be retained permanently.
- Management/Supervisor Training Certificates: to be retained permanently.
- Documentation of Supervised Field Training: to be retained permanently.
- Health and Safety Training Questionnaires documenting equivalent training under 29 CFR 1910.120(e) and past Health and Safety-related Training: to be retained permanently.
- Documentation of "Other Training" including Asbestos, Hazard Communication, Confined Space Entry, Lockout/Tagout, Hearing Conservation or other specialized training programs: to be retained permanently.
- Documentation of Site-specific Training: to be retained permanently.
- 8-Hour Refresher Training Certificates: to be retained for three years from the date of training.
- CPR/First Aid Training Certificates: to be retained for three years from the date of training.
- Bloodborne Pathogen Exposure Control Training: to be retained for three years from the date of training.
- Respirator Fit Tests: to be retained for three years from the date of the Fit Test.

The Health and Safety file of each Program Participant is subject to audit by the Manager, Health and Safety, WHI, or designate.

When a Program Participant leaves the Health and Safety Program for any reason, including permanent reassignment to tasks not requiring participation in Annual Refresher Training, or resignation or termination of employment with Malcolm Pirnie,

Inc., his/her Health and Safety Coordinator forwards the employee's Health and Safety file to the Training Administrator, Health and Safety, WHI, for retention.

When an employee transfers within Malcolm Pirnie, Inc. the Health and Safety Coordinator forwards the employee's Health and Safety file to the Participant's new location and notifies the Training Administrator, Health and Safety, WHI.

Copies of Health and Safety Training records are available to Program Participant's or their authorized representative under the applicable provisions of the OSHA Standards (29 CFR 1910-1926).

6.0 Safety and Health Inspections

The Project Safety Officer is responsible for conducting periodic site inspections each day, attempting to complete corrective actions for hazards observed, and documenting those hazards not readily corrected. If the hazard is severe or an accident, incident, or near miss is likely to occur in the near future, the PSO has the authority to stop the work of Malcolm Pirnie employees as well as subcontractors and suppliers, until the issue can be resolved and the hazard abated.

It is the responsibility of the Project Manager to evaluate the findings of the PSO and to provide the resources to correct the situation. The Corporate Health & Safety Manager or designate, is available to assist as necessary.

The Corporate Health & Safety Manager or designate will visit the site at least twice each year during active operations to inspect the site, the conduct of the work. The Site Safety and Health Plans will be reviewed and recommendations for changes, improvements or revisions will be offered. Safety inspection reports will be reviewed and any outstanding hazard findings discussed with the Project Manager and the PSO.

7.0 Safety and Health Expectations, Incentive Programs, and Compliance

Malcolm Pirnie is committed to providing a safe and healthful work place, free of recognized hazards, and to conduct its operations in accordance with applicable federal, state, and local environmental, health and safety standards, regulations and laws including those of the U. S. Department of Labor, Occupational Health and Safety Administration (OSHA), the U. S. Environmental Protection Agency (EPA), and U. S. Department of Transportation (DOT).

Malcolm Pirnie expects that all employees will plan and conduct their work activities in a responsible and safe manner that reflects this commitment to their personal well-being, that of our clients, and of the general public.

Malcolm Pirnie provides appropriate safety equipment and training to employees to eliminate or reduce exposure to safety and health hazards.

Failure to comply with Malcolm Pirnie's Health & Safety Policies, Procedures or Programs may result in disciplinary action, up to and including termination of employment.

The purpose of this Disciplinary Program is to outline procedures Malcolm Pirnie may use to take disciplinary action against an employee or a group of employees for failure to comply with critical Health & Safety Policies, Procedures and Programs.

Information on the Disciplinary Program will be made available to all employees. Any questions regarding this Program are to be addressed to General Counsel or the Manager, Health & Safety, WHI.

RESPONSIBILITIES

Senior Management

It is senior management's responsibility to actively and visibly support the Health & Safety Program and the annual Health & Safety performance goals, including any Disciplinary Action resulting from deviations from the requirements.

Project Management

Project Managers are responsible for knowing and implementing Health & Safety requirements on their projects. The Project Manager, during work site visits, is responsible for inspecting the project Health & Safety Plan implementation and making changes to Plans, Processes and Procedures as necessary to maintain compliance.

Project Safety Officers

The Project Safety Officer (PSO) is responsible for observing the work and implementing those portions of the Health & Safety Plan assign to them. They may receive first knowledge of project deviations and are expected to correct these issues on a local level, or failing that, raise the issue to a higher level as per the Process Document.

POLICY IMPLEMENTATION

The Project Manager is responsible for the environmental, health and safety compliance aspects of his or her projects. These compliance aspects include applicable federal, State and local laws and regulations and it includes policies, guidelines, procedures instituted by Malcolm Pirnie and its clients. It is the responsibility of the Project Manager to consult with appropriate internal resources and client contacts during the project planning phase and as the project progresses to obtain information and advice on the laws, regulations, policies and procedures that may be applicable to tasks anticipated during the project.

Copies of the project plan and project Health & Safety Plan are made available to project personnel for their use prior to being assigned to project tasks. Personnel who start at the beginning of the projects as well as those who join after should ask to see and read these documents before beginning project work.

Enforcement of this Disciplinary Policy is the responsibility of the Manager of Corporate Health & Safety, with appropriate guidance from General Counsel.

PROGRAM ADMINISTRATION

The Manager or Corporate Health and Safety, WHI, is responsible for maintaining the Disciplinary Program content and consulting General Counsel for guidance regarding disciplinary actions as appropriate. Each SBU Product Delivery Leader is responsible for seeing that the program is implemented in their areas of authority. Project Managers are responsible for identifying and investigating safety violations and following through with corrective actions.

DETERMINATION OF APPARENT VIOLATIONS

An apparent violation is defined as a failure to comply with requirements of applicable laws, regulations, policies or procedures. The failure to comply may arise out of an action, inaction, or a condition of the work area. Responsibility for a violation maybe solely or jointly held, and may be assignable to employees, project management, or other responsible entities beyond the control of Malcolm Pirnie.

Identification of Violation

Anyone can allege an apparent violation. The individual who observes an unsafe or non-complaint action or behavior has an obligation to alert the offending party to the incident and suggest actions or behaviors more inline with applicable standards. If resolution is not obtained in this manner, the Project Safety Officer or the Project Manager should be notified and they may obtain guidance from the Manager of Corporate Health & Safety, WHI, and General Counsel.

When an incident or near-miss occurs in the office or on a project, the Project Manager, in consultation with the SBU Health and Safety Leader, will direct that the accident be documented on the appropriate forms as soon as possible but usually between 24 and 48 hours after being made aware of the incident.

The Manager of Corporate Health & Safety, WHI, will review each accident report and initiate a formal investigation at his discretion.

An apparent violation may also be identified by a Project Manager, PSO, a regulatory enforcement officer, or a Corporate Health & Safety inspector during an informal or periodic safety audit.

Communication of Violation

Upon discovery or notification of an apparent violation, the Project Manager will make every reasonable effort to attempt to mitigate and correct the problem at the earliest opportunity. After the completion of the corrective action, the Project Manager, the PSO or a member of Corporate Health & Safety will verbally review the incident and the corrective action with the responsible or affected employees. Project plans and project Health & Safety Plans will be amended as required to correct or improve procedures.

Disciplinary Action and Documentation

Employees determined to have knowingly committed apparent violations may be subject to disciplinary action on a case-by-case basis. The criterion for determining further disciplinary action may include but is not limited to the following:

- The severity and consequences of the breach;
- An evaluation of the circumstances surrounding the breach;
- The employee's level of knowledge about the specific issue; and,
- The employee's demonstrated willingness to follow the rules in the future.

Depending upon the circumstances uncovered above, repeated violations will usually be handled more severely than first-time incidents.

Disciplinary consequences may include but be not limited to attending refresher training, temporary suspension, and permanent removal from work site, or termination of employment.

If it is determined that during routine observations, incident/near-miss investigations, or compliance audits that the identified violations are the result of an overall lack of commitment to Malcolm Pirnie's EHS policies by the Project Manager or PSO, then disciplinary action may be taken against the employee and the responsible project management personnel as approved by the Manager of Corporate Health & Safety, WHI, with appropriate guidance from General Counsel.

TRAINING

Malcolm Pirnie will provide employees information about the Disciplinary Program via Intranet postings and other communication.

Initial Training

Prior to commencing work, each employee will be responsible for understanding the overall purpose of the project and the specific tasks and procedures need to meet the project objectives. In addition, employees will be mindful of the consequences of intentionally committing an apparent violation of Environmental, Health & Safety rules.

RECORDKEEPING

Disciplinary and Corrective Action Records

Human Resources will maintain file of any apparent violation actions against employees.

Training Records

Individual training certificates will be maintained in the local office Health and Safety files. The Manager, Health and Safety, WHI, will maintain a copy of all corporate exposure control training records. A summary record will be maintained by Health & Safety, COR, in the PeopleSoft database, and will be updated according to the schedule established in the Health and Safety Training section of this manual.

The training records maintained in the local office file will include the following information:

- The dates of the training sessions.
- The contents or a summary of the training sessions.
- The names and qualifications of persons conducting the training.
- The names and job titles of persons attending the training sessions.

Training records shall be maintained for three years from the date on which the training occurred. Upon request, employees will have access to any of his/her training records maintained by the local office, the Manager of Corporate Health and Safety, WHI.

8.0 Accident Reporting

INTRODUCTION

OSHA, in 29 CFR 1904, developed specific recording and reporting requirements, which comprise the framework of the current occupational safety and health recording system. The following sections present Malcolm Pirnie's policy on developing and administering occupational injury and illness records.

Malcolm Pirnie, and others in the architectural and engineering services business, is classified under SIC code 8700, or more exactly, 8711. OSHA, in 29 CFR 1904.16 of the regulations, states that:

- An employer whose establishment is classified in SIC's 52-89, (excluding 52-54, 70, 75, 76, and 80) need not comply, for such an establishment, with any of the requirements of this part except the following:
    - Obligation to report under Section 1904.8 concerning fatalities or multiple hospitalization accidents; and
    - Obligation to maintain a log of occupational injuries and illnesses under Section 1904.2 and make reports under Section 1904.21 upon being notified in writing by the Bureau of Labor Statistics that the employer has been selected to participate in a statistical survey of occupational injuries and illnesses.

Therefore, unless Malcolm Pirnie incurs an obligation under exception (a) or (b), the firm is exempted from compliance with the 29 CFR 1904 record keeping and reporting requirements.

In spite of this exception, it is the firm's policy to comply fully with the requirements of 29 CFR 1904 for the following reasons:

- There are 24 states and 2 territories where the firm may do business that have OSHA approved State Occupational Safety and Health Regulatory and Enforcement Programs. These Programs have the authority to develop and enforce their own regulations as long as they meet, at a minimum, the federal standards. Some states and territories have more stringent employer coverage requirements than federal OSHA, negating the firm's exemption in that state or territory.
- Many of our industrial and some of our municipal clients have vendor/contractor prequalification requirements that the firm must meet in order to be eligible to bid on projects or to enter onto and work at their facilities. Most of the prequalification statements require that the firm provide evidence of its good safety record as documented by the provisions of 29 CFR 1904.
- The firm is required by our Workers Compensation Insurance companies to provide documentation, equivalent to that required under 29 CFR 1904, of alleged occupational injuries and illnesses submitted for coverage under the firm's insurance policies.
- In most instances, when a regulatory compliance officer visits an office or project site, it is simpler to demonstrate compliance than to have to explain why the firm is exempted from compliance.

REPORTING OF FATALITY OR MULTIPLE HOSPITALIZATION INCIDENTS

Within 8 hours after the death of any employee from a work-related incident or the in-patient hospitalization of three or more employees as a result of a work-related incident, Malcolm Pirnie, through the General Counsel, will orally report the fatality/multiple hospitalization by telephone or in person to the Area Office of the Occupational Safety and Health Administration (OSHA), U.S. Department of Labor, that is nearest to the site of the incident, or by using the OSHA toll-free central telephone number. This requirement applies to each such fatality or hospitalization of three or more employees which occurs within thirty (30) days of an incident.

General Counsel will relate the following information:

- Company name.
- Location of incident.
- Time of the incident.
- Number of fatalities or hospitalized employees.
- Contact person with phone number.
- A brief description of the incident.

RECORDKEEPING

OSHA 300 Logs

Each Malcolm Pirnie regional, branch, and project office will maintain, at each location, a log and summary of all recordable occupational injuries and illnesses for employees assigned, permanently or temporarily, to that location. Each recordable injury and illness will be entered on the log and summary as early as possible but no later than 5 working days after receiving information that a recordable injury or illness has occurred. For this purpose, the OSHA No. 300 form shall be used. The log and summary shall be completed in detail according to the instructions on the back of the form. Records shall be established on a calendar year basis.

Employees not in fixed establishments

An OSHA No. 300 log covering operations associated with a project office should be kept at the site. At the project manager's discretion, these records may be kept at the office of record if the following conditions are met:

- The required records are maintained in the office of record for each operation or group of operations, which is subject to common supervision (field superintendent, field supervisor, etc.).
- The address and telephone number of the office of record is available at the worksite.
- The office of record is staffed by someone during normal business hours that can provide information from the records maintained there by telephone and by mail.

Supplementary Records

Each office will maintain a copy of the Incident Investigation Report (Supervisor's Report) for each occupational injury or illness that has occurred in that office or on

projects for which the office is the office of record. The Supervisor's Report will be completed within 5 working days after receiving information that an incident has occurred. The Report shall be completed in the detail prescribed in the accompanying instructions.

Posting

Each Malcolm Pirnie regional, branch, project office and project site trailer will post an annual summary of occupational injuries and illnesses for that location. The OSHA No. 301 form for that office or project will be used to present the summary. If no injuries or illnesses occurred in the year, zeros must be entered on the totals line, and the form must be posted.

The summary shall be completed by February 1 of the year after the reporting year. The Manager of Corporate Health and Safety, WHI, supervises the preparation of the logs and summaries of occupational injuries and illnesses for each location and certifies that the annual summaries of occupational injuries and illnesses are true and complete. The summary covering the previous calendar year shall be posted no later than February 1, and shall remain in place until April 30.

For employees who do not primarily report or work at a single establishment, or who do not report to any fixed establishment on a regular basis, Malcolm Pirnie will present or mail a copy of the summary during the month of February of the following year to each such employee who receives pay during that month.

It is not necessary to post summaries at branch or project offices where operations have closed down during the calendar year.

Retention of records

Records including form OSHA Nos. 300, 301 and supplementary records will be retained in each office for 5 years following the end of the year to which they relate.

Access to records

Malcolm Pirnie will provide, upon request, occupational illness and injury records for inspection and copying by any representative of the Secretary of Labor for the purpose of carrying out the provisions of the act, and by representatives of the Secretary of Health and Human Services during any investigation, or by any representative of a State accorded jurisdiction for occupational safety and health inspections or for statistical compilation.

Malcolm Pirnie will provide, upon request, copies of the log and summary of all recordable occupational injuries and illnesses to any employee, former employee, and to their representatives for examination and copying in a reasonable manner and at reasonable times. The employee, former employee, and their representatives shall have access to the log for any establishment in which the employee is or has been employed.

DEFINITIONS

Recordable occupational injuries or illnesses are any occupational injuries or illnesses which result in:

- Fatalities, regardless of the time between the injury and death, or the length of the illness.
- Lost workday cases, other than fatalities, that result in lost workdays.
- Nonfatal cases without lost workdays, which result in transfer to another job or termination of employment, or require medical treatment (other than first aid) or involve: loss of consciousness or restriction of work or motion. This category also includes any diagnosed occupational illnesses, which are reported to the employer but are not classified as fatalities or lost workday cases.

"*Medical treatment*" includes treatment administered by a physician or by registered professional personnel under the standing orders of a physician. Medical treatment does not include first aid treatment even though provided by a physician or registered professional personnel.

"*First Aid*" is any one-time treatment, and any follow up visit for the purpose of observation, of minor scratches, cuts, burns, splinters, and so forth, which do not ordinarily require medical care. Such one-time treatment, and follow up visit for the purpose of observation, is considered first aid even though provided by a physician or registered professional personnel.

"*Lost workdays*" The number of days (consecutive or not) after, but not including, the day of injury or illness during which the employee would have worked but could not do so; that is, could not perform all or any part of his normal assignment during all or any part of the workday or shift, because of the occupational injury or illness.

9.0Medical Support

INTRODUCTION

A Medical Surveillance Program addresses the effects of toxic chemicals or harmful physical agents on individual workers and verifies the effectiveness of environmental controls. Malcolm Pirnie, in compliance with Occupational Safety and Health Administration (OSHA) regulations, requires Medical Surveillance for workers exposed to asbestos, noise and lead, and for those who work on hazardous waste operations sites. OSHA regulations further require that a physician evaluate employees to determine if they can wear a respirator.

Malcolm Pirnie's Medical Surveillance Program represents one aspect of the company's on-going commitment to provide a safe and healthful workplace, and to conduct its operations following applicable health and safety standards including those of the Federal Department of Labor/OSHA, the United States Environmental Protection Agency (USEPA), and state and local agencies. For further information on any aspect of Malcolm

Pirnie's Health and Safety or Medical Surveillance Programs, contact the Manager, Health and Safety, COR.

PROGRAM OBJECTIVES

The objectives of Malcolm Pirnie's Medical Surveillance Program include:

- Maintaining compliance with applicable workplace health and safety regulations.
- Determining prospective and current employees' general fitness to perform various or specific work assignments.
- Safeguarding the health and safety of employees assigned to work on hazardous waste sites and other sites that may involve exposure to chemical or physical agents.
- Establishing a health baseline for each participating employee, to be compared with subsequent medical evaluations.
- Determining the presence of discernible pre-existing medical conditions for which reasonable workplace accommodations and/or special personal protective equipment may be required.

The medical examinations and testing services provided under this Medical Surveillance Program are not substitutes for regular medical checkups and care recommended by a personal physician.

EMPLOYEE PARTICIPATION

For those projects that have regulatory requirements for medical surveillance, Malcolm Pirnie Project Managers, Supervisors, and Field Team Leaders are responsible for staffing their projects with medically approved staff e.g., staff members who are currently participating in the Medical Surveillance Program. Managers and Supervisors are also responsible for seeing that staff members reporting to them receive and maintain annual Health and Safety medical approvals.

Full-time, part-time, temporary and summer employees must participate in the Malcolm Pirnie Medical Surveillance Program if they or the project meet the following criteria:

- Assigned to work on a hazardous waste site(s).
- Assigned to work on corrective actions taken at treatment, storage and disposal facilities regulated by 40 CFR (Code of Federal Regulations) Parts 264 and 265, the Resource Conservation and Recovery Act of 1976 (RCRA), or by other agencies under agreement with the USEPA.
- Potential exposure to chemical, biological or physical agents.
- Assigned to projects that may require the use of certain personal protective equipment e.g., respirators.
- Potential assignment to work on sites for which OSHA has issued regulations containing applicable Medical Surveillance provisions.
- Assigned to the Malcolm Pirnie Equipment Facility, Monsey, New York.
- Potential exposure to biological agents or infectious material as defined in the Bloodborne Pathogens Standard (29 CFR 1910.1030) described in this manual.

- The client requires that only medically cleared employees work on their site.

CORPORATE MEDICAL CONSULTANT

The Corporate Medical Consultant, Qualisys Medical Network Services, Atlanta, Georgia, assists in determining the content and quality of the Medical Surveillance Program by:

- Developing the content of employee medical examinations.
- Developing medical and occupational history questionnaires.
- Locating, training and managing Regional Medical Clinics.
- Evaluating and reporting medical examination results.
- Maintaining confidential staff medical records.
- Serving Medical Review Officer as part of Malcolm Pirnie's Substance Abuse testing program.
- Providing other medical services as needed including follow-up examinations and special testing for chemical exposure, when appropriate.

REGIONAL MEDICAL CLINICS

Regional Medical Clinics serve one or more company locations and provide Medical Surveillance Program participants with examinations and other program services. Qualisys, in consultation with the Manager of Corporate Health and Safety, and the local Health and Safety Coordinator, selects one or more Regional Medical Clinics for the location. Malcolm Pirnie may request a change in clinic(s) supporting one or more of our sites if the clinic:

- Is more than a 30-minute drive from our site and a closer clinic can be located; or,
- Receives an aggregate of four documented incidents of unsatisfactory performance with any Qualisys client.

Unsatisfactory performance is defined as violations of good medical practice, inadequate clinic hygiene or unethical practices.

Malcolm Pirnie may request the addition of a clinic when:

- A new company location opens that is more than a 30-minute drive from an existing Regional Medical Clinic; or,
- A new field office opens, for six months or more, that is more than a 30-minute drive from an existing Regional Medical Clinic.

All questions and concerns regarding Regional Medical Clinics should be addressed to the Medical Surveillance Administrator, Health and Safety, COR.

TYPES OF EXAMINATIONS

Malcolm Pirnie and Qualisys have established four medical examinations to cover the majority of foreseen Medical Surveillance tasks. They are classified for: respiratory protection clearance, laboratory workers, and field engineers and scientists, generally

grades 1 to A. The actual examination chosen for staff members should relate to their job function and degree of field exposure.

Baseline Medical Examinations

After receiving a conditional offer of employment, candidates who meet the criteria described earlier in this section under "Employee Participation" must complete a Baseline Medical Examination.

Malcolm Pirnie staff members who, because of promotion, changed work assignment, or any other reason, meet the criteria described earlier in this section under "Employee Participation" must complete a Baseline Medical Examination. This examination establishes an employee's or candidate's general health and fitness for potential work assignments, develops baseline physiological data, and/or assesses their ability to wear personal protective equipment.

Annual / Periodic Examinations

Medical Surveillance Program participants complete an Annual Medical Examination to confirm their general health and fitness for current or upcoming assignments, and their ability to wear personal protective equipment. An employee's job classification, age, work history and other factors determine the format and content of the examination. The Corporate Medical Consultant compares the results of the annual examination against the values established by the Baseline or examination and notes significant changes for inclusion in the record. A two-year deferral is available for those employees whose field time is limited or their chemical and radiological exposures are minor.

Special Medical Examinations

More frequent medical examinations may be required if, for example, a program participant exhibits signs or symptoms of exposure to hazardous chemicals or physical hazards or has a medical or occupational history suggesting more frequent examinations. Employees may be potentially exposed to lead, PCBs, mercury, or arsenic on contaminated sites requiring periodic monitoring of body burden. Employees, not in the Hazardous Waste Medical Monitoring Program but who may be exposed to high levels of occupational noise, may be eligible for an annual or biannual audiometric testing.

A program participant also may request special Medical Examinations, the employee's Supervisor, or the Manager of Corporate Health and Safety, WHI. The Corporate Medical Consultant, in consultation with the Manager, Health and Safety, WHI, establishes the frequency and content of Special Medical Examinations.

The components of each of these Medical Examinations include a confidential medical and occupational history, comprehensive physical examination, and a series of medical tests. Copies of the examination protocols can be requested from the Manager of Corporate Health and Safety, WHI.

Exit Medical Examinations

Program participants who leave Malcolm Pirnie, receive permanent reassignment to tasks not requiring participation in the Medical Surveillance Program, or, for any other reason, no longer meet the criteria requiring participation in the Medical Surveillance Program must complete an Exit Medical Examination. The components of this examination are comparable to the Baseline Medical Examinations described earlier in this section.

Substituting a Previous Employer's Exit Medical Examination

Candidates for employment may be permitted, on a limited basis, to submit an Exit Medical Examination from their most recent employer in lieu of receiving a Malcolm Pirnie Baseline Medical Examination. The Corporate Medical Consultant may waive the examination requirement if the components of the candidate's Exit Medical Examination are substantially the same as the Malcolm Pirnie examination protocol, and if the candidate has not been on a site since taking the Exit Medical Examination.

Costs of Additional Medical Evaluations and Consultation

If, during a regularly scheduled examination, a medical condition is discovered that is not work-related and does not interfere with an employee's ability to perform the duties associated with their assignments, the employee may, at their own election, pursue further medical evaluation with their private physician. The employee will, however, be responsible for any costs associated with the follow-up consultations or treatment not covered by their medical plan.

REPORTING MEDICAL EXAMINATION RESULTS

The results of medical examinations received by candidates for employment and Medical Surveillance Program participants are reported according to generally accepted medical practice in the sequence described below:

- The candidate or participant completes the appropriate health questionnaire and brings it and a copy of the exam protocol to the Regional Medical Clinic.
- At the conclusion of Qualisys' evaluation, Qualisys communicates the detailed results of the examination to the candidate or employee in writing explaining any medical condition or findings Qualisys believes may require further evaluation or treatment. This may include any medical condition Qualisys believes will adversely influence the individual's employment.
- Qualisys advises the Manager of Corporate Health and Safety, WHI, in writing, that the candidate or employee has received a medical examination, is in suitable condition for fieldwork, and can wear personal protective equipment. The Medical Surveillance Administrator, Health and Safety, WHI, sends a copy to the candidate or employee's Health and Safety Coordinator for inclusion in the employee's Health and Safety file. Qualisys also sends a copy of the employee's audiometric test results to the Medical Surveillance Administrator, Health and Safety, WHI, for evaluation and filing.

Upon **written** request to Qualisys the candidate or employee's medical records can be sent to their personal physician within fifteen (15) days.

MEDICAL RESTRICTIONS

If the examination uncovers a medical condition that:

- Requires the employee to wear corrective lens for proper vision.
- Prevents an employee from safely using a negative pressure respirator or limits the time a respirator can be worn.
- Requires an employee to wear a hearing protector to prevent further deterioration of hearing ability in noisy environments.

Then these medical restrictions will be:

- Noted on the Medical Summary sent to Health and Safety, WHI.
- Noted on the Employee Medical Summary sent to the employee or candidate's home address.

The Manager, Health and Safety, WHI, may choose to discuss the extent of the restriction with the employee and the employee's immediate Supervisor, and develop reasonable accommodations that will allow the employee the greatest assignment flexibility possible.

Serious medical restrictions that could disqualify an employment candidate or restrict an employee's ability to be assigned to projects in the employee's SBU will be reported to the Director, Human Resources, COR, by the Manager of Corporate Health and Safety, WHI, for resolution.

PROGRAM COMMUNICATION

Qualisys distributes to the Medical Surveillance Administrator, Health and Safety, WHI, a monthly listing of medical examinations to be conducted over the next two months for program participants at their location. The Medical Surveillance Administrator, Health and Safety, WHI, distributes copies of Medical Summaries for program participants at their location to each Health and Safety Coordinator for scheduling.

RECORDS RETENTION

The Health and Safety files in each office are subject to audit by the Manager of Corporate Health and Safety, WHI, or designate. Health and Safety Coordinators shall maintain current, accurate documentation for each program participant at their location.

When a participant leaves the Health and Safety Program for any reason, including permanent reassignment to tasks not requiring participation in the Medical Surveillance Program, resignation or termination of employment with Malcolm Pirnie, Inc., the participant's Health and Safety Coordinator forwards his/her Health and Safety File to the Medical Surveillance Administrator, Health and Safety, WHI, for retention. For a transferred participant, the Health and Safety Coordinator forwards his/her Health and Safety file to the new location and notifies the Medical Surveillance Administrator, Health and Safety, WHI.

Unless directed otherwise by the Manager of Corporate Health and Safety, WHI, Qualisys maintains medical files for all active and inactive program participants for 40

years after termination from the Medical Surveillance Program. Copies of Medical Surveillance records are available to every participant or their authorized representative under the applicable provisions of the OSHA Standards (29 CFR 1910.20).

10.0 Personal Protective Equipment

INTRODUCTION

The purpose of this section is to assist employees in the proper selection and use of personal protective equipment (PPE). Malcolm Pirnie staff shall use PPE when engaged in activities where there is a potential for exposure to chemical, biological, physical or mechanical hazards, or as otherwise required by applicable laws and regulations.

The occupational use of PPE is governed by a series of standards promulgated by the Occupational Safety and Health Administration (OSHA) and found in Title 29 CFR 1910, Subpart I, *Personal Protective Equipment*. These include 29 CFR 1910. 133, *Eye and Face Protection*; 29 CFR 1910.135, *Occupational Head Protection*; and, 29 CFR 1910.136, *Occupational Foot Protection*. PPE required by the OSHA *Respiratory Protection Standard*, 29 CFR 1910.134, and the *Noise Standard* including the *Hearing Conservation Amendment*, 29 CFR 1910.95, are addressed separately.

The OSHA standards dealing with personal protective equipment consist of three types of requirements. Section 1910.132 is a set of general requirements covering all types of equipment and all situations where it is needed. Section 1910.132 requirements do not cover section 1910.134, *Respiratory Protection*, or section 1910.137, *Electrical Protective Devices*, which are subjects of separate rule making. The other sections of Subpart I each give requirements for one particular type of equipment; and certain paragraphs in standards not primarily concerned with PPE call for protective equipment to be used under working conditions regulated by that section. In deciding on protective equipment for a project, project managers may find that provisions of all three apply.

OSHA does not recommend PPE if administrative or engineering controls will eliminate a hazard. Such controls are always preferred over reliance on personal protection to shield an employee from chemicals, processes or machinery known to be dangerous.

POLICY

A written hazard evaluation will be conducted for all Malcolm Pirnie worksites, **on all field projects**, other than work in office environments, to:

- Determine potential hazards to the health and safety of Malcolm Pirnie;
- Evaluate the need for and the feasibility of engineering and/or administrative controls of the hazards; and to,
- Specify effective types of personal protective equipment to reduce potential exposures.

Individual articles of a PPE ensemble will be chosen by a qualified employee, Project Safety Officer (PSO) or Corporate Health & Safety, to provide the best available protection against known or reasonably anticipated chemical and physical hazards. Individual articles of a PPE ensemble will be sized to fit the individual wearing it.

Compromised PPE will not be worn by Malcolm Pirnie employees or employees of Malcolm Pirnie subcontractors.

Contaminated PPE materials will be left at the work site if this can be done in an **environmentally responsible** manner.

RESPONSIBILITIES

OSHA requires that Malcolm Pirnie initiate engineering and work practice controls, to the extent feasible, to minimize the potential for employee exposure to chemical, biological, physical, or mechanical hazards. If recognized health and safety hazards cannot be practically removed from the work environment, and if employee exposures cannot be significantly reduced by administrative means, Malcolm Pirnie must provide employees with appropriate PPE and ensure that it is used properly.

Non-Hazardous Waste Projects

Project Managers

Project Managers are responsible for providing the project resources necessary to determine the appropriate level of PPE for employees working on their projects. To this end, Project Managers and/or PSOs will conduct a preliminary hazard assessment of the worksite and tasks to be performed and specify the appropriate PPE ensemble for each task and location. The Hazard Assessment Checklist, found in Appendix A, should be used to conduct the preliminary hazard assessment. Based upon the information generated in the assessment, and good safety practices, the Project Manager or the PSO can:

- Evaluate, design or purchase feasible engineering controls to isolate the hazard;
- Develop procedures and work practices to control the hazard; and,
- Evaluate and specify PPE required for the safe completion of the project.

Hazardous Waste Projects

For hazardous waste projects, a hazard analysis is conducted when developing a Task or Project Safety Plan (TSP-PSP) for field activities. The Safety Plan writer and reviewers evaluate the potential safety and health hazards posed by the project tasks. Then, in the Safety Plan, they specify levels of protection, the specific PPE in each level, and action level ranges that govern the selection of each level.

Any questions regarding hazard evaluations should be addressed to the SBU Health & Safety Leader or to the Manager of Corporate Health & Safety, WHI.

Qualified Employee

As a practical matter, the Project Manager is likely to delegate the task and hazard evaluation to a junior member of the project team who will often serve as the PSO.

Evaluating hazards and selecting appropriate engineering, work practice and PPE control methods for a project is an important responsibility. To promote the effective completion of this task, the Project Manager will delegate this task to an individual who meets certain education and training qualifications. Employees are considered qualified to select PPE if they meet either of these criteria:

- The employee has received formal training in industrial hygiene or safety practices; or,
- The employee has received training in the selection, use, maintenance and limitations of PPE (e.g., 40-Hour Hazardous Waste Operations, 10-hour Construction Site Safety training, or PPE Training), is familiar with the site, the tasks to be completed and the known or reasonably anticipated site and task hazards.

Project Safety Officer

The Project Safety Officer (PSO) on hazardous waste projects has the responsibility and authority to see that the provisions of the approved Plan are implemented during site activities. The person selected to be PSO must meet the minimum qualifications above.

At the site, the PSO evaluates air-monitoring data, work tasks and site conditions and then specifies a pre-approved level of protection PPE ensemble to be used by Malcolm Pirnie employees. If site conditions change, the PSO may only upgrade or downgrade the level of protection in accordance with the action levels and PPE ensembles specified in the approved Safety Plan. Modifications to the PPE ensembles, the task evaluations or the action levels as a result of unforeseen circumstances must be approved by the SBU Health & Safety Leader (HSL) and/or the Manager of Corporate Health & Safety, WHI.

Equipment Coordinators

The office Equipment Coordinator (E.C.) is responsible for procuring and dispensing expendable PPE for that office.

Employees

Employees are responsible for using the PPE in accordance with both the training they receive, and instructions provided. Employees should alert the PSO or team leader if proper PPE has not been assigned, if they have not been trained in the use and limitations of assigned PPE, and if the PPE is damaged, compromised, or does not appear to be working.

HAZARD ASSESSMENT

Malcolm Pirnie prepares written hazard assessments in order to identify the appropriate PPE ensemble(s) for project work activities. The PPE ensemble(s) for hazardous waste projects are specified in the PSP-TSP. A particular ensemble is chosen based upon:

- Proposed work tasks.
- Potential routes of entry and points of contact.
- Airborne contaminant action levels specified in the Safety Plan.

For projects that do not require a Safety Plan, the Preliminary Hazard Assessment form (Appendix A) is used to develop PPE requirements. The written Hazard Assessment form provides the certifier's name, signature, date(s), and identification of assessment documents. Contact the HSL or the Manager of Corporate Health & Safety, WHI for further assistance.

When new processes are implemented or when existing processes change, the PSO should be notified by the project staff so that the existing Hazard Assessment may be reviewed and updated as necessary.

PPE SELECTION

On projects defined by OSHA's *Hazardous Waste Operations and Emergency Response* standard (29 CFR 1910.120), and on other projects as determined by the hazard assessment, PPE ensembles (Levels of Protection) are selected based upon:

- The toxic materials, physical agents, or waste contaminants known to be present.
- Contaminant concentrations in the waste media.
- The toxicology and the probable routes of entry into the body exhibited by the contaminants.
- Known or expected airborne contaminant concentrations.
- Potential for exposure to physical agents (e.g., electrical, mechanical, hydraulic, pneumatic, chemical, thermal, nuclear, or non-ionizing radiation energy) based upon the type and strength of the energy source and the proximity of the employee to the source.

Individual articles of a PPE ensemble are chosen by a "qualified employee" (previously defined) to provide the best available protection against known or reasonably anticipated chemical and physical hazards. Multiple articles of PPE may be "layered" to provide multi-contaminant and full protection. The various elements of PPE will only protect a worker if the following conditions are met:

- The individual article of PPE must be effective against the hazard (see Appendix B).
- The individual article of PPE must be sized, fitted, worn and secured correctly.
- The functioning surface of the PPE must be intact and not compromised by holes, rips, tears, or split seams.
- The PPE ensemble (see Appendix C) chosen must be effective against all the hazards in the specific situation.

Non-specific action levels have been developed by the U.S. EPA and others as guidelines for determining respiratory and other PPE requirements when exposure air monitoring is conducted by non-specific response field instrumentation. Specific action levels may be used when a site is well characterized, the type and relative concentrations of air contaminants are well known, and appropriate field instrumentation is used to provide real- time exposure data. Malcolm Pirnie has adopted both sets of action levels. These can be found in Appendix C and in the current Malcolm Pirnie Short Form Site Safety Plan form. Airborne Contaminant Action Levels for Selection of PPE Ensembles is provided in Appendix D.

PPE USE

Individual articles of a PPE ensemble will be sized to fit the individual wearing it. To provide effective protection during removal and decontamination, PPE will be donned in the reverse order presented in the appropriate decontamination table. Duct tape will be used to seal overlaps between gloves /boots and the protective clothing, and to reinforce weak seams or tighten the waist of the garment. PPE will be cleaned and maintained in accordance with manufacturer specifications.

Fitting PPE

Proper fit of PPE is critical to providing adequate protection. Proper fit is also associated with comfort and comfort is essential if the employees are to wear the PPE provided. Malcolm Pirnie provides employees with a choice of PPE from several different vendors in a selection of sizes. In training, Malcolm Pirnie discusses and practices proper fitting, use and wear of the PPE.

OSHA believes fit is a critical factor in the overall effectiveness of PPE. PPE that fits poorly will not afford the necessary protection. PPE that is too small will bind and tear; PPE that is too large is harder to manage and can become tangled in equipment presenting additional hazards. Care should be taken to ensure the right size is selected. The user should be fit with the protective device and given instructions on care and use of the PPE. It is very important that employees be made aware of all warning labels for, and limitations of, their PPE.

Adjustment of the PPE should be made on an individual basis, with the goal of achieving a comfortable fit that will maintain the protective device in the proper position. Particular care should be taken in fitting devices for eye protection used against dust and chemical splashes, to ensure that the devices are sealed to the face. In addition, proper fitting of helmets is important to ensure that no helmet will fall off during work operations. When manufacturer's instructions are available, they should be followed carefully.

Damaged PPE

Compromised PPE will not be worn by Malcolm Pirnie employees. When a PPE wearer or their buddy notices that an article of PPE has been compromised, the two will quickly move to the decontamination/support zone to replace or repair the defective article(s).

Employee-Owned PPE

Malcolm Pirnie provides all required PPE at no or little cost to its employees. When employees plan to use personally owned PPE, the employee must present it to the PSO for inspection prior to use at the work site. If the PSO finds that the employee-owned PPE is adequate and has been properly maintained, the employee may use their personal PPE.

IN-USE PPE MONITORING

When wearing PPE at sites, Malcolm Pirnie personnel shall report any perceived problems or difficulties to the PSO. Likely concerns are:

- Perception of odors while wearing APR/SAR.
- Skin, eye, or nasal irritation.
- Unusual residues on PPE.
- Suspected degradation of PPE ensemble.
- Excessive discomfort or fatigue.
- Sudden increases in breathing resistance.
- Personal responses such as rapid pulse, nausea, and chest pain.

Should personnel experience any of these problems while wearing PPE, the PSO will temporarily shut down both Malcolm Pirnie and subcontractors operations on the site and all personnel will move to the support zone until the cause of the problem is identified and corrected.

PPE INSPECTION

PPE shall be inspected by employees before donning and periodically while in use. Protective clothing should be visually inspected before its use for imperfect seams, uneven coatings, tears, and malfunctioning closures. Gloves should be checked for pinholes by entrapping air in the glove, then rolling the cuff toward the fingers, or by inflating the glove and holding it under water. In either case, no air should escape. If a defect is observed in protective clothing or in gloves, the defective item should not be worn onsite. Clean defective apparel shall be disposed of in the trash. Contaminated defective apparel shall be left on-site in appropriate containers if possible.

During field activities, protective clothing should be periodically inspected by the employee and his/her assigned buddy for rips and punctures. Small rips or punctures observed in garments may be taped over, or the garment may be exchanged for a new one. Large rips or punctures require exchange.

PPE DECONTAMINATION

Any site where hazardous waste operations occur must have a written plan that outlines decontamination procedures (see 29 CFR 1910.120 [k]). Employees must be trained on these procedures and the decontamination line must be operational when anyone enters areas on-site where there is suspected contamination.

The Decontamination Plan

The written decontamination plan addresses:

- The number and placement of decontamination stations.
- Decontamination equipment and methods.
- Methods for disposing of clothing and equipment that may not be completely decontaminated.
- Methods of cleaning decon equipment and disposing of decon wastes.

The decontamination plan shall be based on the assumption that all equipment and personnel leaving the Exclusion Zone ("hot zone") will be grossly contaminated. A

personnel decontamination system will be established to wash and rinse (at least once) all reusable PPE worn in contaminated areas. This should be done in combination with a sequential doffing of protective equipment, starting at the first decontamination station with the most heavily contaminated item and progressing to the last decontamination station with the least contaminated article.

The decontamination plan developed should address the following factors:

Type of Contaminant
The extent of personnel decontamination is a function of the amount of the contaminant, its toxicity and its interaction with the PPE articles.

Amount of Contamination
Gross contamination increases the probability of personal contact or the degradation and permeation. Swipe tests may help determine the type and quantity of surface contaminants, or clear articles for disposal as non-hazardous trash.

Type and Level of PPE
Clothing variations and different levels of protection may require adding or deleting stations to the decontamination line.

Work Function
Those who are performing tasks that will not bring them into contact with contaminants may not need to have their garments washed and rinsed while others in the Exclusion Zone, with potential direct contact with the hazardous material, will require a more thorough decontamination.

Location of the Contamination
Contamination on the upper areas of protective clothing poses a greater risk to workers because volatile compounds may generate a hazardous breathing concentration for both the worker and the decontamination personnel. There is also an increased probability of skin contact when doffing the upper part of the clothing.

Decontamination Procedures and Equipment

Decontamination activities should be confined to a designed area within the Contamination Reduction Zone, known as the Contamination Reduction Corridor. The Corridor controls access into and out of the Exclusion Zone and confines contamination activities to a limited area. The size of the Corridor varies depending on the number of stations in the decontamination procedure, overall dimensions of the work control zones, and the amount of space available at the site. On smaller sites or sites with limited contamination potential, the size of the decontamination area and the number of decontamination stations will be severely reduced.

Within the Corridor, distinct areas should be set aside for decontamination of personnel, portable field equipment, discarded clothing, etc. Step-by-step procedures for decontamination of personnel wearing PPE Levels B and C are found in Appendix E at the end of this section.

PPE DISPOSAL

There are few reference guidelines for disposal of contaminated or used PPE garments. Sites requiring Decontamination Corridors will also be equipped to drum, bag, or otherwise dispose of large volumes of PPE wastes generated by site operations. On smaller sites such as well drilling and sampling, or soils sampling projects, field teams are required to bring an adequate supply of heavy gauge opaque plastic garbage bags to hold disposable PPE garments after use.

Contaminated PPE materials will be left at the work site if this can be done in an **environmentally responsible** manner. This activity **must** be negotiated with the client / owner / operator / subcontractor in advance of the fieldwork. If this cannot be done, decontaminate contaminated PPE, conduct a swipe test on a representative sample, and bring it back, in clean plastic bags, to the office. PPE that is used but "clean" or was contaminated but tests "clean" may be disposed of in the office dumpster. PPE that cannot be decontaminated or is contaminated by materials containing mercury, lead, solvents, petroleum, PCBs or dioxin will be disposed of as hazardous waste.

TRAINING

Malcolm Pirnie personnel provided with PPE shall be trained in its use, care, capabilities, and limitations prior to using it in a hazardous work environment. Personnel engaged in hazardous waste operations site activities shall receive the initial 40-hour training, of which PPE instruction is an integral part. Subsequent refresher training will include an annual review in the use, limitations, inspection, and care of PPE. A combined refresher/PPE certificate will be issued documenting this training.

Initial Training

Initial training is provided to all employees that are required to wear PPE. Employees receive initial training in the proper use and care of PPE prior to wearing the PPE in the work place. This training is most effective when the employee understands the hazards that are present, how the PPE provides protection, and the limitations of the PPE.
At a minimum, the training portion of the PPE program should delineate the user's responsibilities utilizing both classroom and hands-on training when necessary to explain the following:

- When PPE is necessary to be worn.
- What PPE is necessary and the selection criteria used for this determination.
- The operation of the selected PPE, including capabilities and limitations.
- The nature of the hazards and the consequences of not using the PPE.
- The human factors influencing PPE performance.
- Instruction in inspecting, donning, doffing, checking, fitting, and using PPE.
- The user's responsibility for decontamination, cleaning, maintenance and repair of PPE.

- Limitations of the PPE.
- Useful life and disposal of the PPE.
- How to recognize emergencies.
- Emergency procedures and self-rescue in the event of PPE failure.
- The buddy system.
- Emergency action planning, and the user's responsibilities and duties in an emergency.

Employees are required to demonstrate their understanding in each of the subject areas listed above. Special emphasis should be placed on proper wear, fit, and limitations of the PPE. If the employee cannot demonstrate a full understanding of the material provided in the training, that employee shall be retrained and must exhibit complete understanding of the material presented before they are allowed to wear the PPE in the work place.

Additional Training

Refresher training is provided when an employee cannot demonstrate a good understanding of the five required OSHA training topics (see above). Employees that are observed using PPE improperly are retrained.

Additional training is provided whenever processes change and new hazards require the use of additional or different PPE.

Staff provided with ancillary PPE (e.g., safety belts, floatation gear) should be trained in its use and care by the PSO before actual use onsite.

Staff requesting PPE who are not in the hazardous waste Health and Safety Training Program and have not received PPE training should be trained in the use and care of the PPE by their PSO before actual use onsite. The PSO will provide the Administrator, Health and Safety, WHI, with an attendance list and a brief summary of the training material covered to document the training and to issue certificates.

Since PPE use often causes discomfort and inconvenience, there is a natural resistance towards wearing it conscientiously. The major thrust of training must be to make the user aware of the need for PPE and to instill the motivation to properly wear and maintain the necessary PPE.

RECORDKEEPING

PPE training should be documented in the site health and safety logbook. The Manager of Corporate Health and Safety, WHI, will maintain a copy of all corporate PPE training records. A summary record will be maintained by Health and Safety, WHI, in the PeopleSoft database, and will be updated according to the schedule established in the Health and Safety Training section of this manual.

The training records maintained in the local office file will include the following information:

- The dates of the training sessions.
- The contents or a summary of the training sessions.
- The names and qualifications of persons conducting the training.
- The names and job titles of persons attending the training sessions.

Training records shall be maintained for three years from the date on which the training occurred. Upon request, employees will have access to any of his/her training records maintained by the local office, the Manager of Corporate Health and Safety, WHI.

11.0 Plans, Programs and Procedures

Plans, Programs and Procedures specific to the Program, the Site and the Task will be modified from our standard Health & Safety Program documents and included in the Task Specific Safety Plan.

12.0 Contractor Information

Malcolm Pirnie and its subcontractors and suppliers will develop and implement the Plans, Programs and Procedures necessary to protect employees, the USACE personnel and the general public. The primary reference for the documents will be the appropriate manual sections of EM 385-1-1, 3 Nov 03.

13.0 Site Specific Hazards and Controls

As previously detailed in Section 4 of this Accident Prevention Plan, Malcolm Pirnie and each of its subcontractors and suppliers will develop Task Safety Plans in accordance with EM 385-1-1, 3 Nov 03. These plans will include a Task/Hazard evaluation section detailing site-specific hazards and controls for each activity of the operation.

MALCOLM PIRNIE

RESPIRATORY PROTECTION

TABLE OF CONTENTS

1.0 INTRODUCTION

The Malcolm Pirnie Respiratory Protection Program has been developed to provide guidance and direction to Project Managers, Project Safety Officers (PSOs), and Project staff on:

- Evaluating respiratory hazards in the workplace.
- The selection and issuance of respiratory protection appropriate to the hazard.
- Inspection, storage and maintenance of respirators.
- Employee training, medical monitoring, and fit testing.
- Environmental surveillance.

This Program conforms to the requirements in the OSHA General Industry Standard, 29 CFR 1910.134, *Respiratory Protection.*

2.0 REFERENCES

The program was developed using the following references as guides:

American National Standard Practices for Respiratory Protection, ANSI Z88.2-1992.

NIOSH Guide to Industrial Respiratory Protection, DHHS, Publication No. 87-116.

NIOSH Pocket Guide to Chemical Hazards, DHHS, Publication No. 94-116.

NIOSH Respirator Decision Logic, DHHS, Publication No. 87-108.

Safety and Health Requirements Manual, U.S. Army Corps of Engineers, EM385-1-1.

American Commodity Specification for Air, ANSI/CGA G-7.1 (latest edition).

OSHA 29 CFR 1910.134 Respiratory Protection - General Industry

OSHA 29 CFR 1926.103 Respiratory Protection - Construction Industry

OSHA 29 CFR 1910.120 Hazardous Waste Operations and Emergency Response

OSHA Instruction CPL 2-2.54

3.0 POLICY

Malcolm Pirnie employees will control their exposures to respiratory hazards, to the extent feasible, by minimizing workplace contamination or limiting exposure to harmful vapors and oxygen deficient atmospheres. This will be accomplished by the design and implementation of accepted engineering control methods e.g.: enclosure, ventilation, or substitution of a less toxic material; or by limiting the time of exposure. When effective engineering or administrative control of atmospheric hazards is not feasible or available, or while being instituted, potentially exposed employees will be issued and be required to use appropriate respirators.

Malcolm Pirnie employees must successfully complete a baseline respiratory protection medical examination and receive a respiratory protection medical clearance prior to wearing any respirator. To remain eligible for respirator use, Malcolm Pirnie employees must successfully complete a biannual medical examination. In addition, each employee will receive annual training in the selection, use, limitations, and care of respiratory protection equipment and, will be fit tested to determine the proper mask size and manufacturer for negative pressure respirators.

4.0 PROGRAM ADMINISTRATION

CORPORATE HEALTH AND SAFETY: The Manager, Health and Safety, COR, will develop, administer, and maintain the Malcolm Pirnie Respiratory Protection Program including:

- Maintaining medical clearance and fit testing records.
- Developing and maintaining respiratory protection training materials.
- Conducting respiratory protection training and fit testing as required.
- Approving the use of supplied air (Level B) respirators on projects.
- Conducting periodic program evaluations, including compliance auditing and program updating, as required by OSHA.

PROJECT MANAGERS: Project Managers are responsible for providing the project resources required to implement this Respiratory Protection Program on their projects. As such, they are responsible for:

- Providing adequate hazard assessments in advance of exposing employees to hazardous working conditions.
- Verifying that employees required to wear respirators on projects have received and are current on the required training, medical monitoring, and fit testing.

SBU HEALTH & SAFETY LEADERS: SBU Health and Safety Leaders are assigned to each SBU and provide project technical support and training for that SBU. Under this Program the SBU Health & Safety Leaders are responsible for:

- Assisting the project team in identifying potential hazards and develop controls which may be used to reduce the reliance on respiratory protection.
- Reviewing supplied air respiratory requirements for projects within the SBU.
- Determining the need for and assisting in the execution of personnel exposure monitoring on projects.
- Arranging for the fit testing of negative and positive-pressure respirators.
- Providing assistance in developing action levels and surrogate dust concentrations using the *Action Levels for Hazardous Waste Site Work* software published by the American Industrial Hygiene Association.

PROJECT SAFETY OFFICERS: Project Safety Officers are responsible for the implementation of this Respiratory Protection Program on a project basis. As such, they are responsible for the completion of the following tasks:

<u>Mobilization</u>

- Review the Project Plan and the Health and Safety Plan to determine the expected respiratory protection requirements for the project.
- Develop a procurement list of respirators in the sizes and types utilized by the selected project team; and, sufficient numbers and types of cartridges appropriate to the hazard and the likely types and numbers of spare parts to support respirator use for the duration of the project. Submit this list to the Equipment Facility.
- Locate potential sources of breathing air if supplied air, SCBAs or ESCBAs will be used.
- Verify all supplies have been delivered to the site.
- Collect fit test records and medical surveillance clearances for all likely field staff for inclusion in the Project Field Binder.
- Conduct last-minute fit testing for out-of-date staff.

On-site Activities

- Verify that field conditions are adequately reflected in the Health and Safety Plan: modify the respiratory protection plan as required and annotate Project documentation.
- Provide adequate environmental surveillance to characterize site atmospheric hazards prior to the start of field operations and then periodically as field operations progress.
- Observe and verify that employees use, inspect, store and maintain respirators properly.
- Verify fit test records and medical surveillance clearances for new staff assigned to the project.

OFFICE HEALTH & SAFETY CONTACTS: Office Health and Safety Contacts are responsible for assisting with the scheduling and paperwork requirements for respirator clearance examinations and maintaining the office copies of medical clearance and fit test records.

MONSEY EQUIPMENT FACILITY: OFFICE EQUIPMENT COORDINATORS: The Monsey Equipment Facility and the office Equipment Coordinators are responsible for respiratory equipment purchasing, cartridge and spare parts inventory, general storage and general maintenance. They are also responsible for verifying that individual staff have current medical clearances and fit testing before issuing respiratory protection, especially supplied air units.

PROJECT STAFF: Project staff will use respiratory protection in accordance with instructions and training received. Employees will guard against damage to the respirator. If a respirator malfunction occurs, the employee will leave the contaminated area, decontaminate the respirator, and then make field repairs approved by the manufacturer. Employees will report to the PSO while out in the field or Health and Safety Medical Administrator, COR, any change in his or her medical status that may impact the employee's ability to wear a respirator safely.

5.0 HAZARD DETERMINATION

A written hazard assessment will be completed for each project involving field activities. For hazardous waste projects or projects requiring the generation of site safety and health plans (SSHPs), the written hazard assessment will be included in the SSHP. For project tasks requiring permit-required confined space entry, the confined space pre-entry evaluation form and the confined space entry permit will be used to document the hazard assessment. For all other projects involving field operations in potentially hazardous environments, the PPE Hazard Assessment form (see Personal Protection Program, Appendix A) will be used.
It is the responsibility of the Project Manager to direct and verify that: the proper hazard assessment document is completed; a copy is made available to each member of the field team; and, a copy is placed in the project files. Corporate Health and Safety may audit project files for compliance with these requirements. Refer to each form for specific distribution requirements.

In assessing respiratory hazards, the Project Manager may rely on experience in similar environments, standard hazardous waste action levels for unknown substances, measurements gathered by direct reading instruments, and personal exposure monitoring results. On some projects, the client may have developed respiratory hazard and worker exposure data that may be applicable. Project Managers and staff should utilize the services of the

SBU Health and Safety Leader to assist in identifying potential hazards and develop controls which may be used to reduce the reliance on respiratory protection.

The nature of the respiratory hazard will be determined as follows:

- Determine what atmospheric contaminants may be present in the workplace.
- Determine whether there is a published Permissible Exposure Limit, Threshold Limit Value, or other available exposure limit or estimate of toxicity for the contaminants. Determine an Immediately Dangerous to Life and Health (IDLH) concentration if available.
- Determine if there is a comprehensive health standard (e.g., lead, asbestos) for the contaminants. If so, there may be specific respirators required that would influence the selection process.
- If the potential for oxygen deficiency exists, measure the oxygen content.
- Measure or estimate the concentration of contaminants.
- Determine the physical state of the contaminant.
- Determine whether the contaminants present can be absorbed through the skin, produce sensitization, or be irritating or corrosive to the eyes or skin.
- Determine odor thresholds for known gas or vapor contaminants.
- Determine if there are any environmental hazards (e.g., confined spaces, active machinery, high noise levels, poor lighting, convoluted passageways, high or low ambient temperatures).

6.0 MEDICAL MONITORING

Prior to an employee's first use of protective respiratory equipment, the employee must pass a physical examination which will provide information as to whether the individual is medically suitable for performing tasks expected of him or her, and be certified suitable for work entailing the use of respiratory equipment by a qualified physician. The physical exam will be confidential, taken during normal work hours, convenient, understandable, and the employee will be given an opportunity to discuss the results with the qualified physician. The medical status of individuals using protective respiratory equipment will be reviewed annually. See Section 3, Medical Monitoring, for additional details.

7.0 RESPIRATOR SELECTION

Malcolm Pirnie will provide, at no cost to employees, NIOSH approved respiratory protective devices that are applicable to and suitable for the intended purpose whenever necessary. Employees will also be provided with necessary training and medical evaluations at no cost.

Common respiratory hazards are gas and vapor contaminants, particulate contaminants, and oxygen deficiencies. Each hazard, or combination of hazards, requires a different type of respiratory protection. Hazard data and other factors such as the intended uses and limitations of available respiratory protective devices, movement and work rate limitations, emergency escape time and distance requirements, and training requirements are considered by Project Managers when selecting the appropriate respirator.

Malcolm Pirnie provides full-face APR, the most common being the MSA Ultra-twin. Alternate APRs include North and Survivair. 5-minute escape respirators (ESCBAs) will be provided for confined space entry projects. Please review any other supplied air respiratory requirements with your SBU Health & Safety Leader prior to ordering from the Equipment Facility or an outside vendor.

Appendix B contains a respiratory protection selection decision tree. Appendix C includes information on the intended uses and limitations of available respirators, protection factors assigned to various types of respirators, and Action Levels for upgrading and downgrading levels of respiratory protection for hazardous waste operations. These reference materials are available to assist in determining the general conditions or situations, which would indicate the most prudent use of respirator protection.

7.1. IDLH Conditions

A location is considered IDLH when:

- It has an atmosphere known or suspected to have concentrations above the IDLH level.
- The oxygen level is below 19.5% at sea-level (150mmHg ppO_2).
- The contaminant concentration is not detectable by routine direct reading instrumentation.
- The contaminant has poor warning properties.

The required respiratory protection for IDLH conditions caused by the presence of toxic materials or a reduced percentage of oxygen as described in the first three conditions is a positive-pressure SCBA or a combination of a supplied-air respirator with an ESCBA. If the oxygen level is adequate, an air-purifying respirator may be used in an IDLH condition corresponding to the fourth condition if:

- The air-purifying respirator has a reliable end-of-service-life indicator that will warn the user prior to a contaminant breakthrough.
- A cartridge change schedule is implemented based on cartridge service data including desorption studies (unless the cartridges are changed daily), expected concentration, patterns of use, and duration of exposure have been established, and the chemical does not have a ceiling limit.

When respirators are worn under IDLH no less than two workers will enter the hazardous area and there will be at least one standby person per worker will be suited and ready in a safe area. The standby persons will be equipped and trained to assist the respirator wearers in case of difficulty. Communications (visual, voice, signal line, telephone, radio, or other suitable means) will be maintained between the standby persons and the wearers.

7.2. Confined Spaces

Occasionally, an acceptable entry condition cannot be attained in a confined space or the client specifies that a certain level of respiratory protection or type of respirator must be used. Under these conditions, the confined space will be classified permit-required and:

- Two or more trained entrants will enter the confined space.
- There will be one trained attendant stationed outside the space.
- There will be at least one standby person per entrant, stationed in a safe are outside the confined space and ready to render assistance to the entrants.
- The standby persons will equip to assist the respirator wearers in case of difficulty.
- They will be familiar with the confined space, and they will have documented training in conducting rescues in similar environments.
- Communications (visual, Voice, signal line, telephone, radio, or other suitable means) will be maintained between the standby persons and the wearers.

Malcolm Pirnie employees will not enter a confined space with a known or suspected IDLH atmosphere.

See Malcolm Pirnie's Confined Space Entry Program for further details.

7.3. Facial Hair

A respirator, either positive or negative pressure, equipped with a face piece (tight or loose fitting), will not be worn if facial hair comes between the sealing surface of the face piece and the face or if facial hair interferes with valve function.

7.4. Communications

Ambient noise environment and communications needs will be considered when specific respirators are selected. When ambient noise levels are low, adequate communications should be possible using standard respirators equipped with a speaking diaphragm. When ambient noise levels are high, the project team should develop hand or code signals to signify basic information and emergency communication. When detailed communications are required, cranial, throat, or ear microphone systems connected to two-way radios should be used.

7.5. Vision

Persons requiring eyeglasses to work may make arrangements to purchase the appropriate inserts through their Equipment Coordinator. This insert allows corrective lenses to be worn inside the respirator face piece. Conventional eyeglasses and contact lenses cannot be worn while wearing protective respiratory equipment. Employees will be reimbursed for the costs of corrective lens grinding and mounting in the respirator inserts up to a cost of $150.00. Fees for any associated eye examinations will not be reimbursed through the Health and Safety Program budget.

7.6. Low Temperatures

Low temperatures may cause detrimental effects on the performance of respirators. A low-temperature environment may cause fogging of the lens and freezing or improper sealing of the valves. Respirators with nose cups that direct the warm and moist exhaled air through the exhalation valve without contacting the lens should be used on cold days. Face pieces with nose cups may provide satisfactory vision at temperatures as low as -32^{o}C (-25^{o}F).

When using an SCBA or an SAR at low temperatures, the users should thoroughly review the manufacturer's instructions and, if necessary, consult with the manufacturer to become thoroughly familiar with the precautions and recommendations of using specific equipment in cold-weather conditions.

Work-warming regimens should be developed based upon the Threshold Limit Values (TLVs) developed for Cold Stress by the American Conference of Governmental Industrial Hygienists (ACGIH), latest edition.

7.7. High Temperatures

Wearing a respirator in a high temperature environment creates additional stress on a worker. Using a lightweight respirator, offering a low resistance to breathing and minimal dead-air space, should minimize the additional stress. Appropriate respirators include powered air-purifying respirators, continuous flow supplied-air respirators, using a half-face piece in lieu of a full-face piece, or using a nose cup in full-face piece devices. A supplied-air respirator approved with a vortex tube is recommended for use in a high-temperature environment.

The elastomeric components of respirators stored in high-temperature environments may deteriorate at an accelerated rate. The face piece may become permanently distorted if the respirator is stored incorrectly. Arrangements should be made to store respirators in cooler environments and to increase inspection and sanitization frequencies.

Work-cooling regimens should be developed based upon the Threshold Limit Values (TLVs) for Heat Stress developed by the American Conference of Governmental Industrial Hygienists (ACGIH), latest edition.

7.8. Respirator Approvals

APRs and ASRs are approved by National Institute of Occupational Safety and Health (NIOSH) for a specific contaminant or class of contaminants. A listing of approved respirators is available in the

"NIOSH Certified Equipment List," US Department of Health and Human Services document number DHSS (NIOSH) 91-105. The approvals are valid only for the respirator/cartridge combinations specified. Modifications to or mixing of equipment may void the approval. Malcolm Pirnie employees will only use respirators that are NIOSH approved for the hazard.

8.0 BREATHING AIR QUALITY

Compressed air used for respiration will be of high purity. Breathing air will meet at least the requirements of the specification for Grade D breathing air as described in Compressed Gas Association Commodity Specification G-7.1 (latest edition). Compressed oxygen will not be used in a supplied-air respirator or in an open circuit self-contained breathing apparatus. Compressed oxygen must never be used with airline respirators.

Breathing air may be supplied to SARs from cylinders or air compressors. Cylinders will be tested and maintained as prescribed in the Shipping Container Specification Regulations of the Department of Transportation (49 CFR Part 178).

The compressor for supplying air will be equipped with necessary safety and standby devices. A breathing air-type compressor will be used. Compressors will be constructed and situated so as to avoid entry of contaminated air into the system and have suitable in-line air purifying sorbent beds and filters installed to further assure breathing air quality. The air delivery system will include an air receiver of sufficient capacity to enable the respirator wearers to escape from a contaminated atmosphere in the event of compressor failure. The system will be alarmed to indicate compressor failure and overheating. Oil-lubricated compressors will have a high-temperature or carbon monoxide alarm, or both. If only a high-temperature alarm is used, the air from the compressor will be frequently tested for carbon monoxide to insure that it meets the specifications above.

For fixed, plant air systems, airline couplings will be incompatible with outlets for other gas systems to prevent inadvertent servicing of airline respirators with other gases or oxygen.

Breathing gas containers will be marked in accordance with American National Standard Method of Marking Portable Compressed Gas Containers to Identify the Material Contained, Z48.1 (latest edition); Federal Specification BB-A-1034a, June 21, 1968, Air, Compressed for Breathing Purposes; or Interim Federal Specification GG-B-675b, April 27, 1965, Breathing Apparatus, Self-Contained.

9.0 FIT TESTING

Every respirator wearer will receive fitting instructions including demonstrations and practice in how the respirator should be worn, how to adjust it, and how to determine if it fits properly.

The "fit" or integrity of the face piece-to-face seal of a respirator affects its performance. A secure fit is important with positive-pressure equipment, and is essential to the safe functioning of negative-pressure equipment. Most face pieces fit only 60 percent of the population; thus, each face piece must be tested on the potential wearer in order to ensure a tight seal. Facial features such as scars, hollow temples, very prominent cheekbones, deep skin creases, and dentures or missing teeth may interfere with the respirator-to-face seal. A negative-pressure respirator will not be worn when such conditions prevent a good seal.

9.1. Fit-Testing Methods

Malcolm Pirnie utilizes both qualitative and quantitative fit-testing methods to fit test employees. Fit testing, arranged through the SBU Health and Safety Leader, is offered for negative-pressure APR respirators. Fit testing is currently not required for atmosphere supplying and emergency escape respirators.

All personnel required to utilize respiratory protection equipment must be qualitatively and/or quantitatively fit tested prior to use of the equipment. The fitting of respirators will be facilitated by having multiple sizes and a variety of interchangeable cartridges. After the selection of the proper respirator has been made the user shall wear the proposed respirator for five minutes prior to the initiation of a qualitative or quantitative fit test.

An exception to the annual testing rule concerns the use of negative pressure respirators for protection from exposure to asbestos containing materials (ACM), lead, inorganic, arsenic, or acrylonitrile. In accordance with 29 CFR 1910.1001, 1910.1025, 1910.1018, and 1910.1045 respectively, employees exposed to these chemicals shall be fit tested at least every 6 months.

9.2. Qualitative Fit Test

A qualitative fit test shall be performed in the following manner:

- Positive-pressure check: With the exhaust port(s) blocked, the positive pressure of slight exhalation should remain constant for several seconds.
- Negative-pressure check: With the intake port(s) blocked, the negative pressure of slight inhalation should remain constant for several seconds.
- Stannous Chloride Irritant Smoke Test: Once a satisfactory fit is obtained on the negative or positive pressure checks, the quality of the facial seal is verified by the use of stannous chloride irritant smoke. The high efficiency particulate filter cartridges are attached to the respirator for this test. The employee will be instructed to close his/her eyes and to breathe normally during the test. The irritant smoke is puffed around the entire face seal and cartridge seal, slowly at first and with increasing smoke density if the wearer experiences no irritation.

9.3. Quantitative Fit Test

A quantitative fit test instrument, *PORTACOUNT PLUS*, a continuous-flow condensation nucleus counter, is used in determining the particle concentration outside the mask and inside the mask. This ratio is known as the fit factor. A fit factor of 100 is considered passing the test for a half-mask, and 500 for the full face mask (10 x protection factor). The test subject shall perform the following exercises for each independent test:

- Normal Breathing: In the normal standing position, without talking, the subject shall breathe normally for at least one minute.
- Deep Breathing: In the normal standing position the subject performs deep breathing for at least one minute, pausing so as not to hyperventilate.
- Turning Head Side To Side: Standing up, the subject shall slowly turn his/her head from side to side between the extreme positions to each side. The head shall be held at each extreme position for at least 5 seconds.
- Moving Head Up and Down: Standing up, the subject shall slowly move his/her head up and down between the extreme position straight up and the extreme position straight down. The head shall be held at each extreme position for at least 5 seconds.
- Jaw Movements: The subject will be asked to read the “rainbow passage” aloud during this test.
- Normal Breathing: In the normal standing position, without talking, the subject shall breathe normally for at least one minute.

Additional exercises will be required for employees to be tested with SCBA. Respirator restraining straps may not be over-tightened for testing. The straps shall be adjusted by the wearer to give a reasonably comfortable fit typical of normal use. Employees who wear eyeglasses shall be tested while wearing them (half-mask respirators only).

During fit testing, Malcolm Pirnie employees will be offered two brands of respirators in various sizes. The most commonly used full-face APR is the MSA Ultra-twin. Alternate APRs include North and Survivair. Respirator fit testing is conducted by the SBU Health and Safety Leaders according to the

OSHA protocols in Appendix D to this section. Fit testing may also be conducted by the PSO with the proper equipment.

With regard to air-purifying respirators, the fit factor obtained during quantitative fit testing has little predictive ability for determining the specific level of protection that will be achieved all of the time in the workplace. Because of this, the respirator assigned protection factors listed in Appendix C should not be exceeded no matter how high the fit factor during fit testing.

10.0 RESPIRATORY USE

Respiratory protection devices shall be used:

- For activities that cannot be safely controlled by engineering methods, such as for pesticide applications required by the EPA Worker Protection Standard or hazardous exposures to carcinogenic, mutagenic, teratogenic or other highly toxic materials.
- When the working atmosphere is or may be oxygen deficient. If so, supplied air respirators shall be used.
- When working in confined spaces where toxic (above 1ppm unknown VOC's) or hazardous atmospheres (oxygen deficient) are present.
- When airborne radioactive or toxic materials could exceed recommended exposure limits.
- For emergency use when loss of life or serious property loss or damage may be involved.

The PSO will observe the use of respirators to ensure that proper procedures are followed. This surveillance will allow the PSO to monitor program effectiveness.

10.1. Inspection

It is the employee's responsibility to inspect and maintain his or her air-purifying respirator. Respirators assigned to individuals will be inspected in the office before going to a field site. Respirators assigned to individuals used routinely and stored at a field site will be inspected each time it is cleaned and sanitized but at least weekly. A respirator that is not routinely used but is kept ready for emergency use will be inspected after each use and at least monthly to assure that it is in satisfactory working condition.

Respirator inspection will include a check of the tightness of connections and the condition of the face piece seal, headbands, valves, connecting tube, and canisters. The face piece seal is critical to effective respirator use and must be checked each time the respirator is donned. Cartridges, straps, and air valves are routinely replaced and should also be checked prior to respirator use. Rubber or elastomer parts will be inspected for pliability and signs of deterioration.

Each self-contained breathing apparatus will be inspected monthly. Air and oxygen cylinders will be fully charged according to the manufacturer's instructions. The SSO or the Office Equipment Coordinator will determine that the regulator and warning devices function properly prior to use.

A record will be kept of inspection dates and findings for respirators maintained for emergency use on Form 1 in Appendix C.

10.2. Maintenance

Respirators will be periodically maintained by employee in accordance with manufacturers' instructions. Maintenance procedures for APRs, SARs, SCBAs and ESCBAs typically used by Malcolm Pirnie are presented in Appendix C to this section.

Respirator spare parts for each type and brand of respirator in use will be stocked in each office and at each field office or trailer by the PSO. Defective respirators requiring professional service should be sent back to the rental agency or to the Equipment Facility for repair.

Respirators must be decontaminated and sanitized before being reused. The insides of masks become soiled due to exhalation, body oils, and perspiration. Respirators will be sanitized following the manufacturers instructions using the disinfectant recommended by the manufacturer.

10.3. Storage

APRs, SCBAs, SARs, and ESCBAs will be stored in a clean, dry, climate controlled area according to manufacturers' instructions. For APRs, store the sanitized respirator in a clean drawstring or zip-lock type plastic bag. For SCBAs and SARs, this means folding and placing all parts in its protective case according to manufacturers' instructions. During long-term storage, the SCBA and SAR face piece will be stored in a clean drawstring or zip-lock type plastic bag. For ESCBAs, hood and hoses will be properly folded and sealed in the cylinder carry bag.

Respirators should never be stored hanging freely or placed on horizontal surfaces in areas of potential airborne or surface contamination. Respirators should never be stored in areas of extreme heat or cold. Respirators should never be stored in areas where access could be blocked by an accidental chemical release. The floor in front of emergency response respirator cabinets will be marked to restrict materials from blocking access to the cabinet.

11.0 WORKPLACE EXPOSURE MONITORING

To ensure the safety of employees who are required to wear respiratory protection, surveillance must be maintained of the conditions in the work area and of the degree of worker exposure or stress. Stress is the combination of work rate, environmental conditions, and physiological burdens of wearing a respirator. Heat and cold stress monitoring protocols, as outlined in Section 3 of the *Malcolm Pirnie Health and Safety Procedures Manual*, Medical Monitoring, may be sufficient to monitor worker stress levels.

Changes in operating procedures, temperature, air movement, humidity, and work practices may influence the concentration of a substance in the work area atmosphere. These factors necessitate periodic monitoring of the air contaminant concentration.

Testing on hazardous waste sites will include real-time vapor and dust contaminant monitoring. Air monitoring indicator compounds and heavy metal dust action levels will be determined using the *Action Levels for Hazardous Waste Site Work* software published by the American Industrial Hygiene Association and available from each SBU Health and Safety Leader. Testing will continue at regular intervals for the duration of field activities to assure that the contaminant exposure has not risen above the maximum protective capability of the respirators being used.

Personnel air monitoring will be conducted on any employee potentially exposed to the following OSHA substance specific regulated compounds at or above the action level or short-term exposure limit for that compound:

Asbestos	Vinyl chloride
Inorganic arsenic	Lead
Cadmium	Benzene
Coke oven emissions	Formaldehyde
Acrylonitrile	Ethylene oxide
	1,2-dibromo-3-chloropropane

If a respirator is used by an employee for protection from any one of these compounds, then personal exposure monitoring for that compound must be performed.

Personnel exposure monitoring for other compounds or in other circumstances will be conducted at the discretion of the SBU Health & Safety Leader, the Project Manager, the PSO, or the Manager, Health and Safety, COR.

12.0 PROGRAM REEVALUATION

The Manager, Health and Safety, COR will reevaluate the Respiratory Protection Program at least annually, and any changes due to regulatory revision or variations in company operations will be incorporated into the written program at that time.

13.0 TRAINING

Malcolm Pirnie employees found medically fit to wear respiratory protection will be given pre-assignment and annual retraining in the proper selection and use of respiratory protection. The training will provide the employees an opportunity to handle the respirator, have it adjusted and fitted properly, test its face-piece-to-face seal by performing positive and negative fit checks, wear it in normal air for a reasonable familiarity period, and, finally, to wear it in a test atmosphere.

Training shall be conducted by a competent person prior to use. Written records shall be kept for the duration of employment and shall include names, training dates, and subject areas covered. The subjects covered by the training shall include:

- The respiratory hazards to which an employee may be exposed.
- The operation, limitations, and capabilities of the selected respirator.
- Inspection, donning, and doffing of the respirator, including checking the fit and seals during respirator use.
- Maintenance and storage of the respirator.
- Respirator malfunctions and medical signs and symptoms of ineffective use.
- Emergency procedures.
- The written Respiratory Protection Program.
- The training will also include sufficient practice to enable the employee to become confident in the use of the respirator.

13.1. Refresher Training

Refresher training in respirator use will be required annually in conjunction with fit testing, when an employee will use an unfamiliar type of respirator, or before use when an employee has not used a respirator during the previous six months. This training may be accomplished during on-site safety training conducted by the PSO prior to the start of field operations.

14.0 RECORDKEEPING

All records kept under this Section are subject to OSHA employee record keeping requirements under 29 CFR 1910.1020.

14.1. Fit Test Records

Copies of all fit test results will be maintained by Corporate Health and Safety for seven years. A fit test record will include:

- Name of test subject.
- Date of testing.
- Name of the test conductor.
- Fit factors obtained from every respirator tested (indicate manufacturer, model, size and approval number).
- Name and type of face piece(s) which has failed during the qualitative test or has yielded a fit factor less than those prescribed in Appendix A.
- Notes (eyeglasses, dentures, scars, etc.)

When applicable, the computer printout for quantitative fit testing will also be maintained as part of the record. The following information will also be recorded as part of the record:

- Manufacturers' name and model of QNFT equipment.
- Initial ambient concentration.
- Individual exercise results.
- Calculation of penetration for each exercise.
- Overall fit factor (average of all exercises).

Employees should obtain a record of fit testing when performed by others. Original fit test records will be kept in the individual's Health and Safety file. Copies of fit test records will be forwarded to the Administrator, Health and Safety, WHI, quarterly.

14.2. Medical Clearance Records

The Corporate Medical Consultant will provide a written opinion, which describes the ability of the employee to wear the prescribed respirator and recommends limitations on the use of respirators if any. The report and opinion will be forwarded to the employee and the Manager, Health and Safety, COR. Copies will be distributed to the appropriate office Health and Safety Contact.

14.3. Inspection Forms

A written record will be made each month by the office or regional Equipment Coordinator of inspection dates and findings for respirators maintained for emergency use. The record will be made using Form 1 in Appendix C or equivalent. Records will be retained for the operating life of the unit. If the unit is transferred or sold, a copy of the inspection records will accompany the unit.

TABLE OF CONTENT

1.0 PURPOSE

The purpose of this document is to provide procedures for implementation of the **Malcolm Pirnie, Inc.** contract based **Substance Abuse Detection and Deterrence Program**. These procedures are based upon Malcolm Pirnie, Inc.'s commitment to maintain a safe, healthful, productive, and Drug-Free work environment for all employees, and to provide for the safe and efficient delivery of services to all our clients. These procedures are to be implemented only when there is a specific contractual obligation to conduct such screening on employees involved in a specific project.

2.0 OBJECTIVES

The objectives of this program follow. These objectives are applicable only where there is a specific contractual obligation requiring Malcolm Pirnie to meet certain requirements by implementing baseline and random substance abuse testing or for cause.

- Identify safety/security sensitive or testing designated employees, when contractually required, for inclusion in the contract specific baseline and random drug screening program.
- Establish a procedure for baseline and random drug screening of employees in safety/security sensitive or testing designated positions when contractually required.
- Establish a procedure for drug and substance screening of employees, when contractually required and for cause, where there is reasonable suspicion that the employee has certain illegal or illicit substances in their system or in their possession while performing their duties.

3.0 BASIS FOR TESTING

Drug testing shall occur under the following circumstances:

3.1 Baseline

Malcolm Pirnie employees specified by contract shall be subject to baseline drug testing. Employees subject to drug testing will be notified by the Branch Health and Safety Contact as to where and when they should report to have the drug-screening specimen taken.

3.2 Random

Malcolm Pirnie employees specified by contract shall be subject to random drug testing. All employees specified by contract shall be eligible for each random selection. The **Medical Review Officer** will randomly select a number equal to the required percentage of employees contractually specified for drug testing annually. At a minimum, the drug testing shall be conducted on a semi-monthly basis. Employees selected for random drug testing will be notified by the Branch Health and Safety

Contact as to where and when they should report to have the drug-screening specimen taken.

3.3 Reasonable suspicion

Malcolm Pirnie will drug test employees specified by contract when reasonable suspicion to test exists. A Reasonable suspicion means an articulable belief based on specific facts and reasonable inferences drawn from those facts that an employee may be under the influence of illegal drugs/ controlled substances. Specific designated acts or conduct can create a reasonable suspicion or trigger a request for a drug screen. Circumstances which can constitute a basis for determining reasonable suspicion may include, but are not limited to:

- Abnormal or erratic behavior on the part of the employee;
- Information provided by a reliable and credible source;
- Direct observation of drug use or possession; or
- Presence of the physical symptoms of drug use (i.e., glassy or bloodshot eyes, slurred speech, poor coordination or reflexes).

Malcolm Pirnie will, at the discretion of the Manager, Health and Safety, request hair sample testing in addition to urine sampling.

3.4 Post accident

This drug program mandates drug testing if a contractually specified employee has been involved in a work related accident while working on the contract that involves an injury requiring hospitalization, or causes significant property damage.

Project managers or field team leaders responsible for employees who meet the criteria above and who are subject to this contractually mandated Program have the authority and the responsibility to prevent that employee from engaging in further work of any sort. Upon removing the employee from the project, the project manager or field team leader will immediately contact the Manager, Health and Safety.

The employee's supervisor, upon receipt of information regarding a subject employee becoming injured, causing an injury to another or causing significant property damage, and who may have done so while under the influence, will contact the Manager, Health and Safety. The Manager, Health and Safety, in consultation with General Counsel, may arrange for a drug test. After arrangements are made and communicated to the supervisor, the supervisor will direct the employee to report to the prearranged clinic for the submission of a test specimen. Failure to do so will result in disciplinary action. (*SEE DISCIPLINARY CONSEQUENCES)*

4.0 CONFIDENTIALLY OF MEDICAL RECORDS

Every reasonable effort will be made to maintain confidentiality throughout the drug screening process. Individual test results may not be released to any other party, or parties, without specific written authorization by the tested person, except as follows:

The employee authorizes the transmittal of the information;

The employee has signed a release form for the EAP or a back to work agreement with Malcolm Pirnie in which the results of the screen must be known to management officials with a "need to know" for further action concerning the employee;

The employee as been sent for drug testing and the Medical Review Officer must inform the Manager, Health and Safety or the Senior Manager, Human Resources of the test results;

- When a claim is made against Malcolm Pirnie which involves the drug screen and/or its result; and,
- When complying with State or Federal requirements
- Upon request, legible copies of the results of all drug tests will promptly be made available to the employee or their duly authorized representative.

All EAP records are regarded as confidential medical records and are not available to anyone outside of the EAP staff without a signed release of information from the employee or as otherwise permitted by applicable laws or regulations.

Security and access to drug test results and other medical records will be governed by the applicable sections of governing laws and regulations including but not limited to, OSHA, 29 CFR 1910.20.

5.0 DEFINITIONS

Accident means an unexpected or unintended event resulting in a time loss, personnel injury or significant property damage.

Canceled Test means a drug or alcohol test that has been declared invalid by the Medical Review Officer (MRO).

Company Premises means all company facilities, their surrounding grounds and parking lots, vehicles, work sites and leased space.

Confirmation Test means a second analytical procedure to identify the presence of a specific drug metabolite which is independent of the screen test and which uses a different technique and chemical principle from that of the screen test in order to ensure reliability and accuracy. Gas Chromatography/Mass Spectrometry (GC/MS) is the authorized confirmation method for cocaine, marijuana, opiates, amphetamines, and phencyclidine.

Controlled Substances/Drugs means those drugs including prescription medicines and illegal substances listed in Schedules I-V of Section 202 of the Federal Controlled Substances Act, (21 U.S.C. 812) and as further defined in regulation at 21 CFR 1308.11 to 1308.15.

Controlled Substance (or Drug) Test means a method for determining the presence of controlled substances in a urine sample using a scientifically reliable method performed in accordance with the procedures specified by NIDA.

Employee Assistance Program (EAP) means the Malcolm Pirnie sponsored counseling program that offers assessment, short-term counseling, and referral services to employees for a wide range of drug, alcohol, and mental health problems, and monitors the progress of employees while in treatment.

Employee Assistance Program Administrator means the individual responsible for ensuring the development, implementation and review of the Malcolm Pirnie EAP. At Malcolm Pirnie, this is the Senior Manager, Human Resources, COR.

Illegal Drugs means a controlled substance included in Schedule I or II, as defined by section 802(6) of Title 21 of the United States Code, the possession of which is unlawful under chapter 13 of that Title. The term Illegal Drugs does not mean the use of a controlled substance pursuant to a valid prescription or other uses authorized by law.

Medical Review Officer means the individual responsible for receiving laboratory results generated from the Malcolm Pirnie Drug-Free Workplace Program who is a licensed physician with knowledge of substance abuse disorders and the appropriate medical training to interpret and evaluate all positive test results together with an individual's medical history and any other relevant biomedical information. For Malcolm Pirnie, currently this is Everett Walker, D.O., of Qualisys Medical**,** Atlanta, Georgia.

NIDA is the acronym for the National Institute on Drug Abuse. This organization has instituted specific standards for the collection, transportation, analysis and the reporting of drug tests. NIDA also approves and monitors the precision of laboratory methods and results.

NIDA-like testing evaluates the same controlled substances and illegal drugs using identical methods and cutoff levels for the determination of positives. The primary differences are:

- NIDA paperwork (Federal chain of custody) is more involved and has more copies.
- NIDA screens require split specimen storage.

Random Testing means a system of drug testing imposed without individualized suspicion that a particular individual is using illegal drugs, and may either be:

- Uniform-unannounced testing of designated employees occupying a specific area, element or position; or
- A statistically random sampling of such employees based on a neutral criterion, such as social security numbers.

Safety/security Sensitive means those positions involving job duties that if performed with inattentiveness, errors in judgement, or diminished coordination dexterity, or composure may result in mistakes that could present real and/or imminent threat to the personal health or safety of the employee, co-workers, and/or the general public.

Supervisor means an employee having authority to hire, direct, assign, promote, reward, transfer, furlough, layoff, recall, suspend, discipline, or remove other employees, to adjust their grievances, or to effectively recommend such action, if the exercise of the authority is not merely routine or clerical in nature, but requires the consistent exercise of independent judgment.

Testing Designated Position means a position contractually designated by a client for inclusion in the drug-testing program even though that position may be safety/security sensitive.

Verified Positive Test Result means a test result that was positive on an initial FDA-approved immunoassay test, confirmed by a Gas Chromatography/Mass Spectrometry assay, (or other confirmatory tests approved by the Department of Health and Human Services), and reviewed and verified by the Medical Review Officer in accordance with this plan and the Mandatory Guidelines for Federal Workplace Drug Testing Programs (latest edition – 1989).

6.0 FINDING OF DRUG USE AND DISCIPLINARY CONSEQUENCES

6.1 Determination of Drug Use

An employee may be found to use illegal drugs on the basis of any appropriate evidence including, but not limited to:

- Direct observation of drug use or abnormal or erratic behavior on the part of the employee;
- The employee is found to possess any quantity of an illegal drug;
- Information provided by a reliable and credible source;
- Refusal to provide a specimen for random testing purposes;
- A verified positive test result; or,
- An employee's voluntary admission.

6.2 Removal from Work

Malcolm Pirnie shall refer an employee found to use illegal/controlled drugs to the EAP, and immediately remove the employee from safety sensitive positions including all fieldwork and work-related driving. At the discretion of the Client Service Manager, in consultation with General Counsel, the Manager, Health and Safety, and as part of the EAP, an employee may continue work on certain projects.

6.3 Range of Disciplinary Action

Disciplinary action taken against an employee found to use illegal/controlled drugs might include the full range of disciplinary actions, including termination. The severity of the action chosen will depend upon the circumstances of each case.

6.4 Termination

Malcolm Pirnie shall terminate an employee for:

- Refusing to obtain counseling or rehabilitation through an EAP as required by Section 10.2 after having been found to use illegal/controlled drugs;
- Not refraining from illegal/controlled drug use after a first finding of such use.

All letters to propose and decide on a termination action should be written after consultation with General Counsel.

6.5 Refusal to Take a Drug Test when Required

Malcolm Pirnie recognizes the legitimate concerns that some employees may have about any employer's mandatory drug screening program. However, in order to do business with certain clients, Malcolm Pirnie must agree to contractual drug screening requirements. When Malcolm Pirnie is required to initiate a drug screening program for a program contract or a specific project, any employee who refuses to be baseline tested when required will be unable to work on that project or that contract. Because of business circumstances, Malcolm Pirnie may not be able to retain an employee who refuses to submit to a drug test in that employee's position. No applicant who refuses to be tested shall be permitted to work on contracts requiring testing for illegal drug use.

Any employee who refuses to be tested during the random testing period after being baseline tested will be subject to the full range of disciplinary action, including termination. Attempts to alter or substitute the specimen provided will be deemed a refusal to take the drug test when required.

7.0 DRUG TESTING PROCEDURES

When drug screening of employees is required, a urinalysis test shall be given to detect the presence of amphetamines, cocaine metabolites, opiate metabolites, phencyclidine, and for marijuana metabolites. Malcolm Pirnie may also request, at the discretion of the Manager, Health and Safety, hair sample testing in addition to urinalysis testing.

Any drug screen under the provision of this Program shall include a urinalysis test to detect the presence of the following drug groups:

For baseline and random drug screens the following process will be observed:

- The Branch Drug Program Coordinator sends Qualisys a list of who should be included in the initial and random pool of eligible employees.
- For random testing, Qualisys sends a letter to the Branch Drug Program Coordinator indicating the names of the computer-generated name(s) of the employee(s) who will be tested.
- The Branch Drug Program Coordinator sends an Authorization form to Qualisys for each selected employee and sets up appointments with the clinic.
- The employee reports to the Qualisys clinic and releases a specimen for use in drug screening.
- The Qualisys clinic uses an approved chain-of-custody procedure to identify, seal, and ship specimens to a laboratory certified to perform drug tests by the Department of Health and Human Services.
- Specimens, including primary and split (when required) specimens, will be stored in accordance with the requirements of 49 CFR Part 40. Any specimens that test positive for drugs will be retained in frozen storage for a minimum of one year by the laboratory.
- Drug screenings will be conducted using an accepted immunoassay method. All positive tests will be confirmed using the Gas Chromatography/Mass Spectroscopy (GC/MS) drug testing method.
- The drug test results are sent from the certified laboratory directly to Qualisys. Negatives are reported as per established procedure for medical surveillance results. Positives are immediately given to the Medical Review Officer.
- Upon confirmation by the Medical Review Officer, the Medical Review Officer attempts to contact and speak with the employee. The Medical Review Officer will attempt to make contact with the employee at the office for two days. If contact is made, then based upon the results of the discussion with the employee and Medical Review Officer's experience and, the Medical Review Officer will provide a copy of the test results to the Manager, Health and Safety and recommend one of the following courses of action:

    - The employee should be removed from duty and referred to the EAP for counseling and rehabilitation;

- The employee should be removed from duty until a retest confirms or corrects the results of the first test; or,

- Sufficient anomalies exist in the test and/or the test results that the employee should submit to a retest without removal from duty.

If contact cannot be made within the two-day period, then the Medical Review Officer will provide a copy of the test results to the Manager, Health and Safety along with his or her recommendation.

8.0 NOTICE

8.1 General Notice

A general notice on Malcolm Pirnie's responsibilities to provide a Drug-Free Workplace has been published in the **Malcolm Pirnie Policy Guide**, which is periodically posted in all offices, has been reproduced in Section 3.0 above, and is provided to, read, and signed by all employees. When a new contract requires the implementation of this Substance Abuse Detection and Deterrence Program, the Project Officer will issue a general notice to the affected office(s) announcing the implementation of this testing program, as required by a specific project contract. The notices shall explain:

- The purpose of the Drug-Free Workplace Program.

- That the Program will include mandatory testing.

- The availability and conditions under which an employee may voluntarily disclose illegal drug use without receiving disciplinary action (safe harbor).

- The availability and procedures necessary to obtain counseling and rehabilitation through the EAP.

- The circumstances under which testing may occur

- That opportunity will be afforded to submit medical documentation of lawful use of an otherwise illegal drug.

- That the laboratory assessment is a series of tests which are highly accurate and reliable, and that, as an added safeguard, laboratory results are reviewed by a Medical Review Officer.

- That positive test results verified by the Medical Review Officer may be disclosed to the employee, the Corporate Drug Program Coordinator, the EAP Manager, and only to management officials with a "need to know" or such disclosure as otherwise required by applicable laws or regulations.

- That all medical and rehabilitation records created by this Drug Testing Program and at the EAP will be deemed confidential records and may not be disclosed without the prior written consent of the patient, an authorizing court order, or otherwise as permitted by Federal law implemented under 42 CFR Part 2.

8.2 Individual Notice

In addition to the information provided in the general notice, an individual notice will be distributed to all employees in safety/security sensitive and testing designated positions explaining:

- That the employee's position has been designated a " testing designated position" or a /security sensitive position";
- That the employee will have the opportunity to voluntarily admit to being a user of illegal drugs and to receive counseling or rehabilitation (safe harbor).
- That the employee's position will be subject to random testing prior to the start of the project.

8.3 Signed Acknowledgment

Each employee in a Safety/Security Sensitive or Testing Designated Position shall be asked to acknowledge in writing that the employee has received and read the notice which states that the employee's position has been designated for random drug testing and that refusal to submit to testing, after an initial base-line drug screening test, will result in initiation of disciplinary action, up to and including dismissal. If the employee refuses to sign the acknowledgment, the employee's supervisor shall note on the acknowledgment form that the employee received the notice. This acknowledgment, which is advisory only, shall be kept in the branch and COR Human Resource employee file. An employee's failure to sign the notice shall not preclude testing that employee, or otherwise affect the implementation of this order since the Drug Free Workplace Policy will previously have notified all employees of the requirement to be drug-free.

APPENDIX B

Safety Statistics
February 2008
Malcolm Pirnie Inc.

MALCOLM PIRNIE EXPERIENCE MODIFICATION RATE PERFORMANCE CEILING IS 1.0			
BLS total Recordable Cases for 2006[1] For NAICS 54133	MPI Total Incident Rate for 2007	BLS Total Lost Workday Cases for 2006[1] for SIC NAICS 54133[2]	MPI Total Lost Workday Cases Incident Rate for 2007
1.5	.60	0.5	.16

[1] Last Available date
[2] MPI Industry Class

Year	2003	2004	2005	2006	2007
Total Hours Worked (Less benefit hours)	2,906,716	2,916,417	3,251,772	3,771,927	3,692,187
Number of Employees	1398	1506	1785	1700	1787
Experience Modifier	.79	0.77	.74	.72	.68
Number of Total Recordable Incidents	10	8*	13*	11	11
Number of Fatalities	0	0	0	0	0
Recordable Lost Day Incidents	4	1	6	1	3
Recordable Lost Days	7.5	17	18	1	189
Recordable Restricted Day Incidents	1	2	1	0	0
Recordable Restricted Days	6	22	15	0	0
Recordable No Lost Day Incidents	5	6	7	10	8
Total Incident Rate [1]	.69	0.54	0.86	.64	.60
Lost Day Incident Rate [2]	.27	.07	.36	.05	.16

[1]Incident Rate (Total # Incidents) = # Recordable Incidents x 200,000/Total Hours Worked
[2]Incident Rate (# Lost Day Incidents) = # Recordable Lost Day Incidents x 200,000/Total Hours Worked
* Same case included in lost days and restricted days

OSHA's Form 300A
Summary of Work-Related Injuries and Illnesses

Year 2006

U.S. Department of Labor
Occupational Safety and Health Administration

Form approved OMB no. 1218-0176

All establishments covered by Part 1904 must complete this Summary page, even if no injuries or illnesses occurred during the year. Remember to review the Log to verify that the entries are complete.

Using the Log, count the individual entries you made for each category. Then write the totals below, making sure you've added the entries from every page of the log. If you had no cases write "0."

Employees, former employees, and their representatives have the right to review the OSHA Form 300 in its entirety. They also have limited access to the OSHA Form 301 or its equivalent. See 29 CFR 1904.35, in OSHA's Recordkeeping rule, for further details on the access provisions for these forms.

Number of Cases

Total number of deaths	Total number of cases with days away from work	Total number of cases with job transfer or restriction	Total number of other recordable cases
0	1	0	10
(G)	(H)	(I)	(J)

Number of Days

Total number of days of job transfer or restriction	Total number of days away from work
0	1
(K)	(L)

Injury and Illness Types

Total number of...	(M)		(M)
(1) Injury	10	(4) Poisoning	0
(2) Skin Disorder	1	(5) Hearing Loss	0
(3) Respiratory Condition	0	(6) All Other Illnesses	0

Establishment information

Your establishment name: Malcolm Pirnie, Inc.

Street: 104 Corporate Park Drive

City: White Plains State: NY Zip: 10602

Industry description (e.g., Manufacture of motor truck trailers)

North American Industry Classification System (NAICS)
5 4 1 6

Employment information

Annual average number of employees: 1700

Total hours worked by all employees last year: 3,771,927

Sign here

Knowingly falsifying this document may result in a fine.

I certify that I have examined this document and that to the best of my knowledge the entries are true, accurate, and complete.

Company executive

Vice President
Title

914-694-2100
Phone

1/26/2007
Date

Post this Summary page from February 1 to April 30 of the year following the year covered by the form

Public reporting burden for this collection of information is estimated to average 50 minutes per response, including time to review the instructions, search and gathering and maintaining the data needed, and completing and reviewing the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments about these estimates or any aspects of this data collection, contact: US Department of Labor, OSHA Office of Statistics, Room N-3644, 200 Constitution Ave. NW, Washington, DC 20210. Do not send the completed forms to this office.

R2-0000138

OSHA's Form 300A
Summary of Work-Related Injuries and Illnesses

Year 2005

U.S. Department of Labor
Occupational Safety and Health Administration
Form approved OMB no. 1218-0176

All establishments covered by Part 1904 must complete this Summary page, even if no injuries or illnesses occurred during the year. Remember to review the Log to verify that the entries are complete

Using the Log, count the individual entries you made for each category. Then write the totals below, making sure you've added the entries from every page of the log. If you had no cases write "0."

Employees, former employees, and their representatives have the right to review the OSHA Form 300 in its entirety. They also have limited access to the OSHA Form 301 or its equivalent. See 29 CFR 1904.35, in OSHA's Recordkeeping rule, for further details on the access provisions for these forms.

Number of Cases

Total number of deaths	Total number of cases with days away from work	Total number of cases with job transfer or restriction	Total number of other recordable cases
0	6	1* (same case inc. in H)	11
(G)	(H)	(I)	(J)

Number of Days

Total number of days of job transfer or restriction	Total number of days away from work
15	18
(K)	(L)

Injury and Illness Types

Total number of...	(M)		(M)
(1) Injury	13	(4) Poisoning	0
(2) Skin Disorder	0	(5) Hearing Loss	2
(3) Respiratory Condition	0	(6) All Other Illnesses	2

Establishment information

Your establishment name: Malcolm Pirnie, Inc.

Street: 104 Corporate Park Drive

City: White Plains State: NY Zip: 10602

Industry description (e.g., Manufacture of motor truck trailers)

Standard Industrial Classification (SIC), if known (e.g., SIC 3715)
8 7 1 1

Employment information

Annual average number of employees: 1785

Total hours worked by all employees last year: 3251772

Sign here

Knowingly falsifying this document may result in a fine.

I certify that I have examined this document and that to the best of my knowledge the entries are true, accurate, and complete.

Mark A. McGowan, Associate — Company executive

Mgr, Health & Safety — Title

914-291-2464 — Phone

1/20/2006 — Date

Post this Summary page from February 1 to April 30 of the year following the year covered by the form

OSHA's Form 300A
Summary of Work-Related Injuries and Illnesses

Year 2004

U.S. Department of Labor
Occupational Safety and Health Administration
Form approved OMB no. 1218-0176

All establishments covered by Part 1904 must complete this Summary page, even if no injuries or illnesses occurred during the year. Remember to review the Log to verify that the entries are complete

Using the Log, count the individual entries you made for each category. Then write the totals below, making sure you've added the entries from every page of the log. If you had no cases write "0."

Employees former employees, and their representatives have the right to review the OSHA Form 300 in its entirety. They also have limited access to the OSHA Form 301 or its equivalent. See 29 CFR 1904.35, in OSHA's Recordkeeping rule, for further details on the access provisions for these forms.

Number of Cases

Total number of deaths (G)	Total number of cases with days away from work (H)	Total number of cases with job transfer or restriction (I)	Total number of other recordable cases (J)
0	1	2	6

Number of Days

Total number of days of job transfer or restriction (K)	Total number of days away from work (L)
22	17

Injury and Illness Types

Total number of... (M)			
(1) Injury	7	(4) Poisoning	0
(2) Skin Disorder	1	(5) Hearing Loss	0
(3) Respiratory Condition	0	(6) All Other Illnesses	0

Post this Summary page from February 1 to April 30 of the year following the year covered by the form

Establishment information

Your establishment name MALCOLM PIRNIE, INC.

Street 104 CORPORATE PARK DR.

City WHITE PLAINS State NY Zip 10602

Industry description (e.g., Manufacture of motor truck trailers)
Consulting Engineering

Standard Industrial Classification (SIC), if known (e.g., SIC 3715)
8711

Employment information

Annual average number of employees 1,506

Total hours worked by all employees last year 2,916,417

Sign here

Knowingly falsifying this document may result in a fine.

I certify that I have examined this document and that to the best of my knowledge the entries are true, accurate, and complete.

Company executive

Mgr., Health & Safety
Title

914-641-2484
Phone

1/15/2005
Date

R2-0000140

OSHA's Form 300A
Summary of Work-Related Injuries and Illnesses

Year 2003

U.S. Department of Labor
Occupational Safety and Health Administration
Form approved OMB no. 1218-0176

All establishments covered by Part 1904 must complete this Summary page, even if no injuries or illnesses occurred during the year. Remember to review the Log to verify that the entries are complete

Using the Log, count the individual entries you made for each category. Then write the totals below, making sure you've added the entries from every page of the log. If you had no cases write "0."

Employees, former employees, and their representatives have the right to review the OSHA Form 300 in its entirety. They also have limited access to the OSHA Form 301 or its equivalent. See 29 CFR 1904.35, in OSHA's Recordkeeping rule, for further details on the access provisions for these forms.

Number of Cases

Total number of deaths	Total number of cases with days away from work	Total number of cases with job transfer or restriction	Total number of other recordable cases
0	3	1	5
(G)	(H)	(I)	(J)

Number of Days

Total number of days of job transfer or restriction	Total number of days away from work
6.5	3
(K)	(L)

Injury and Illness Types

Total number of...	(M)		(M)
(1) Injury	5	(4) Poisoning	0
(2) Skin Disorder	0	(5) Hearing Loss	0
(3) Respiratory Condition	0	(6) All Other Illnesses	4

Establishment information

Your establishment name Malcolm Pirnie, Inc.

Street 104 Corporate Park Dr.

City White Plains State NY Zip 10602

Industry description (e.g., Manufacture of motor truck trailers)
Consulting Engineering

Standard Industrial Classification (SIC), if known (e.g., SIC 3715)
8 7 1 1

Employment information

Annual average number of employees 1398

Total hours worked by all employees last year 2,906,716

Sign here

Knowingly falsifying this document may result in a fine.

I certify that I have examined this document and that to the best of my knowledge the entries are true, accurate, and complete.

Company executive

Mgr. H&S
Title

914-641-2484
Phone

1/14/2004
Date

Post this Summary page from February 1 to April 30 of the year following the year covered by the form

OSHA's Form 300A
Summary of Work-Related Injuries and Illnesses

Year 2002

U.S. Department of Labor

Occupational Safety and Health Administration

Form approved OMB no. 1218-0176

All establishments covered by Part 1904 must complete this Summary page, even if no injuries or illnesses occurred during the year. Remember to review the Log to verify that the entries are complete

Using the Log, count the individual entries you made for each category. Then write the totals below, making sure you've added the entries from every page of the log. If you had no cases write "0."

Employees, former employees, and their representatives have the right to review the OSHA Form 300 in its entirety. They also have limited access to the OSHA Form 301 or its equivalent. See 29 CFR 1904.35, in OSHA's Recordkeeping rule, for further details on the access provisions for these forms.

Number of Cases

Total number of deaths	Total number of cases with days away from work	Total number of cases with job transfer or restriction	Total number of other recordable cases
0	0	1	6
(G)	(H)	(I)	(J)

Number of Days

Total number of days of job transfer or restriction	Total number of days away from work
2	0
(K)	(L)

Injury and Illness Types

Total number of...	(M)		
(1) Injury	5	(4) Poisoning	0
(2) Skin Disorder	2	(5) All other illnesses	0
(3) Respiratory Condition	0		

Establishment information

Your establishment name Malcolm Pirnie, Inc

Street

City State Zip

Industry description (e.g., Manufacture of motor truck trailers)
Consulting Engineering

Standard Industrial Classification (SIC), if known (e.g., SIC 3715)
8 7 1 1

Employment information

Annual average number of employees 1366

Total hours worked by all employees last year 2,852,672

Sign here

Knowingly falsifying this document may result in a fine.

I certify that I have examined this document and that to the best of my knowledge the entries are true, accurate, and complete.

Company executive

ASSOCIATE
Title

914 694 2100
Phone

9/28/04
Date

Post this Summary page from February 1 to April 30 of the year following the year covered by the form

APPENDIX C

HEALTH AND SAFETY QC CHECKLIST
PREPARATION FOR FIELD ACTIVITIES

The following should be completed prior to initiating fieldwork:

- ☐ Notify local EMS of fieldwork
  - ☐ Date called/individual spoken to:_____
- ☐ Confirm that all field personnel are familiar with the contents of the Site Health and Safety Plan
- ☐ Approximate hospital route copied and ready for placement in field vehicles
- ☐ Colored maps of the area ready for placement in field vehicles
- ☐ Compile current personnel training certificates
  - ☐ First Aid (2 team members)
  - ☐ 8-Hour Refresher (all team members)
  - ☐ Site Supervisor Training (at least one team member)
  - ☐ Other _____
  - ☐ Other_____
- ☐ Current certifications checked for deficiencies
  - ☐ Deficiencies observed _____
- ☐ Compile medical surveillance records
- ☐ Fit test current?
  - ☐ Yes
  - ☐ No_____
- ☐ PPE and health and safety equipment and supplies have been ordered
  - ☐ First aid kit
  - ☐ Fire extinguisher
  - ☐ Eye wash
  - ☐ Nitrile gloves
  - ☐ Dust masks (for optional use)
  - ☐ Tyvek booties
  - ☐ Full tyvek suits (for optional use during soil sampling)

- ☐ PPE and health and safety equipment and supplies have been delivered
  - ☐ First aid kit
  - ☐ Fire extinguisher
  - ☐ Eye wash
  - ☐ Nitrile gloves
  - ☐ Dust masks (for optional use)
  - ☐ Tyvek booties
  - ☐ Full tyvek suits (for optional use during soil sampling)

HEALTH AND SAFETY QC CHECKLIST
KICKOFF AUDIT

- ☐ PPE and health and safety equipment and supplies have been delivered and are ready for transport to the site
    - ☐ First aid kit
    - ☐ Fire extinguisher
    - ☐ Eye wash
    - ☐ Nitrile gloves
    - ☐ Dust masks (for optional use)
    - ☐ Tyvek booties
    - ☐ Full tyvek suits (for optional use during soil sampling)
- ☐ Health and safety equipment is up-to-date and in working order
    - ☐ First aid kit
    - ☐ Fire extinguisher
    - ☐ Eye wash
- ☐ Approximate hospital route placed in field vehicles
- ☐ Colored maps of the area placed in field vehicles
- ☐ Current personnel training certificates on file
- ☐ Medical surveillance records on file
- ☐ Fit test records on file
- ☐ Site Safety and Health Plan placed in field vehicles

APPENDIX D

DOCUMENTATION OF SITE SPECIFIC TRAINING

HAZWOPER TRAINING				OTHER TRAINING				
NAME	**INITIAL (DATE)**	**8HR (DATE)**	**MGR (DATE)**	**DOT (DATE)**	**CSE (DATE)**	**CPR/First Aid / BBP (Exp. DATE)**	**MEDICAL (DATE)**	**FIT TEST MAKE / SIZE / TYPE (DATE)**
Dudek, Edward	11/88	01/06	11/88			02-00/02-00/08-01	11/04	3M/SML/FF 01/96
McCann, Jim	12/04	07/04	09/95				10/04	MSA/LG/FF 01/05
Zamek, Erika	8/02	9/07					12/07	

- Note: Please note that CPR/FA/BBP are expiration dates
- Training/fit testing will be updated prior to the commencement of field activities.
- Other team members will be added to this table when the sampling team is selected.

R2-0000148

APPENDIX E

MALCOLM PIRNIE

SITE SAFETY TAILGATE MEETING

PROJECT NAME:		CLIENT NAME:	
PROJECT NUMBER:		PROJECT LEADER:	
PREPARED BY:		DATE:	

ON-SITE SAFETY MEETING RECORD

Location:

Task to be Performed:

I. Purpose for meeting: (check all that apply)

☐	Daily Safety Briefing
☐	Begin New Task. Task:
☐	Periodic Safety Meeting
☐	New Site Procedures
☐	New Site Conditions / Information
☐	New Site Workers

Meeting Attendees:

Name (Print)	Signature	Company
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		

MALCOLM PIRNIE

SITE SAFETY TAILGATE MEETING

II. Topic (check all that apply)			
☐	Site Safety Personnel	☐	Decontamination
☐	Work Area Description	☐	Emergency Response
☐	Site characterization	☐	Hazard Communication
☐	Equipment Hazard(s)	☐	On-site Emergency
☐	Biological Hazard(s)	☐	On-site Injuries
☐	Chemical Hazard(s)	☐	Evacuation Procedures
☐	Physical Hazard(s)	☐	Rally Point
☐	Heat Stress	☐	Emergency Communications
☐	Cold Stress	☐	Directions to Hospital
☐	Site Control	☐	Emergency Equipment
☐	Work and Support Zones	☐	Drug and Alcohol Policies
☐	PPE	☐	Medical Monitoring
☐	Air Monitoring	☐	Task Training
☐	Safe Work Practices	☐	Unexploded Ordnance (UXO)

III. Remarks

V. Verification

I certify that the personnel listed on this roster received the briefing described above. Site personnel not attending this meeting will be briefed before beginning their assigned duties.

_____ _____

Site Safety Representative Date

APPENDIX F

MALCOLM PIRNIE

CORPORATE HEARING CONSERVATION PROGRAM

TABLE OF CONTENTS

MALCOLM PIRNIE

CORPORATE HEARING CONSERVATION PROGRAM

INTRODUCTION

Noise is the perception of pressure waves in the air caused by a vibrating source. The ears transduce this mechanical energy to electrochemical impulses that are transmitted to the brain, resulting in the perception of sound. Noise is unwanted sound. This Hearing Conservation Program sets forth requirements for reducing noise and protecting employees who may be exposed to excessive noise levels.

These requirements are based on the Occupational Safety and Health Administration Hearing Conservation Program described in 29 CFR 1910.95. The standards for noise that disrupts speech communication and applicable for the safe performance of work are derived from the speech interference levels described in the reference, Handbook of Noise Measurement.

The primary goal of the hearing conservation program is to reduce and eventually eliminate hearing loss due to occupational exposures.

Malcolm Pirnie's Hearing Conservation Program involves:

Identification of exposed personnel (task and assignment identification, workplace and personal monitoring).
Implementation of noise-reducing engineering and administrative controls.
Audiometric testing (baseline and annual).
Training.
Use of hearing protective devices (plugs, ear muffs).

1. REFERENCES

The program was developed using the following references as guides:

29 CFR 1910.95, "Occupational Noise Exposure"
29 CFR 1926.52, "Occupational Exposure to Noise in Construction"
NIOSH "National Institute for Occupational Safety and Health"
ANSI "American National Standards Institute"
American Conference of Governmental Industrial Hygienists, Threshold Limit Values for Physical Agents in the Work Environment. ACGIH, Cincinnati, OH.
Peterson, A., Handbook of Noise Measurement, Chapter 4.18, "Masking-I Can't Hear You When the Water's Running," GenRad, Inc., 9th edition (1980).

2. POLICY

Malcolm Pirnie employees will control their exposures to hazardous noise, to the extent feasible, by minimizing workplace exposure whenever possible. This will be accomplished by the design and implementation of accepted engineering control methods e.g.: altering the noise-producing equipment or changing the environment to reduce noise levels; or by limiting the time of exposure. When effective engineering or administrative control of hazardous noise is not available, or while being instituted, potentially exposed employees will be issued and be required to use appropriate hearing protection devices at no cost.

Selected Malcolm Pirnie employees, who have the potential to have significant noise exposures, will complete a baseline audiometric medical examination and receive medical clearance prior to wearing any hearing protective device. These Malcolm Pirnie employees will complete annual audiometric testing for as long as they continue to have potential significant noise exposures to ensure that the employee has not suffered a significant threshold shift. In addition, each selected employee will receive annual training in the selection, use, limitations, and care of hearing protection equipment.

This document applies to all Malcolm Pirnie employees who may be exposed to excessive noise levels in both construction and non-construction work.

3. RESPONSIBILITIES

3.1. Corporate Health & Safety Manager

The Corporate Health & Safety Manager (CHSM) will develop, administer, and maintain the Malcolm Pirnie Hearing Conservation Program including:

- Reviewing field operations to determine if there is a potential for exposure to hazardous levels of noise.
- Reviewing and evaluating the results of the audiometric tests.
- Providing training to employees who may be or have been exposed to noise that exceeds the applicable standards.
- Selecting the most appropriate type of hearing protectors for employees exposed to noise at levels above 85 dBA (50% dose).
- Fitting and training the employee in the use of hearing protectors

3.2. Project Managers

Project Managers are responsible for:

- Anticipating and identifying areas where Malcolm Pirnie employees may be assigned on their projects that may expose them to potentially hazardous levels of noise.
- Accepting employees' concerns regarding noise levels in the workplace.
- Notifying the CHSM of employees who are suspected or confirmed to be exposed routinely or intermittently at levels equaling or exceeding the 8-hour action level of 85 dBA (50% dose) or the time-weighted average of 90 dBA, regardless of the use of hearing protectors.
- Directing the Project Safety Officer (PSO) to conduct noise surveys to establish the noise levels at a suspected work site; and, directing the PSO to post the appropriate signs in specific areas and operations or on equipment under Malcolm Pirnie's control that may expose employees to noise equaling or exceeding 85 dBA (50% dose).
- Where feasible, directing the PSO to conduct personal dosimetry noise surveys on employees who may be exposed to noise levels that exceed the permissible limits.
- Assisting with the design of feasible engineering controls to reduce employee exposure to noise.
- Notifying project personnel of areas with hazardous noise.
- Notifying the CHSM when there is concern about noise levels.
- Enforcing the use of hearing protectors where required.
-

3.3. Equipment Facility Manager

The Malcolm Pirnie Equipment Facility Manager is responsible for:

- Maintaining or procuring an adequate collection of noise-monitoring equipment, including sound-level meters, octave-band analyzers, personal dosimeters, and calibrators to assess employee exposures.

3.4. Project Staff

Project staff are responsible for:
Contacting the Project Manager or the PSO if noise levels in the workplace are of concern.

- Use hearing protectors where required and adhere to requirements listed on signs identifying noisy areas.
- Participate in required medical exams, required training and demonstrations on how to properly fit protectors offered by Malcolm Pirnie.

4. DEFINITIONS

4.1. Action Level

The sound level which when reached or exceeded necessitates implementation of activities to reduce the risk of noise-induced hearing loss. OSHA currently uses an 8-hour time weighted average of 85 dBA and a 12-hour time weighted average of 82 dBA as the criterion for implementing an effective hearing conservation.

4.2. Baseline Audiogram

A valid audiogram against which subsequent audiograms are compared to determine if hearing thresholds have changed. The baseline audiogram is preceded by a quiet period so as to obtain the best estimate of the person's hearing at that time.

4.3. dB (Decibel)

The unit used to express the intensity of sound. The decibel was named after Alexander Graham Bell. The decibel scale is a logarithmic scale in which 0 dB approximated the threshold of hearing in the mid frequencies for young adults and in which the threshold discomfort is between 85 and 95 dB and the threshold for pain is between 120 and 140 dB.

4.4. Hazardous Noise

A hazardous noise is any sound for which any combination of frequency, intensity, or duration is capable of causing permanent hearing loss in a specified person.

4.5. Noise Dose

The noise exposure expressed as a percentage of the allowable daily exposure. For OSHA, a 100% dose would equal an 8-hour exposure to a continuous 90-dBA noise; a 50% dose would equal an 8-hour exposure to an 85-dBA noise or a 4-hour exposure to a 90-dBA noise.

4.6. NRR (Noise Reduction Rating)

The NRR is a single-number rating method which attempts to describe hearing protection based on how much the overall noise level is reduced by the hearing protection itself. When estimating A-weighted noise exposures, first subtract 7 dB from the NRR and then subtract the remainder from the A-weighted noise level. The NRR theoretically provides an estimate of the protection that should be met or exceeded by 98% of the wearers of a given device.

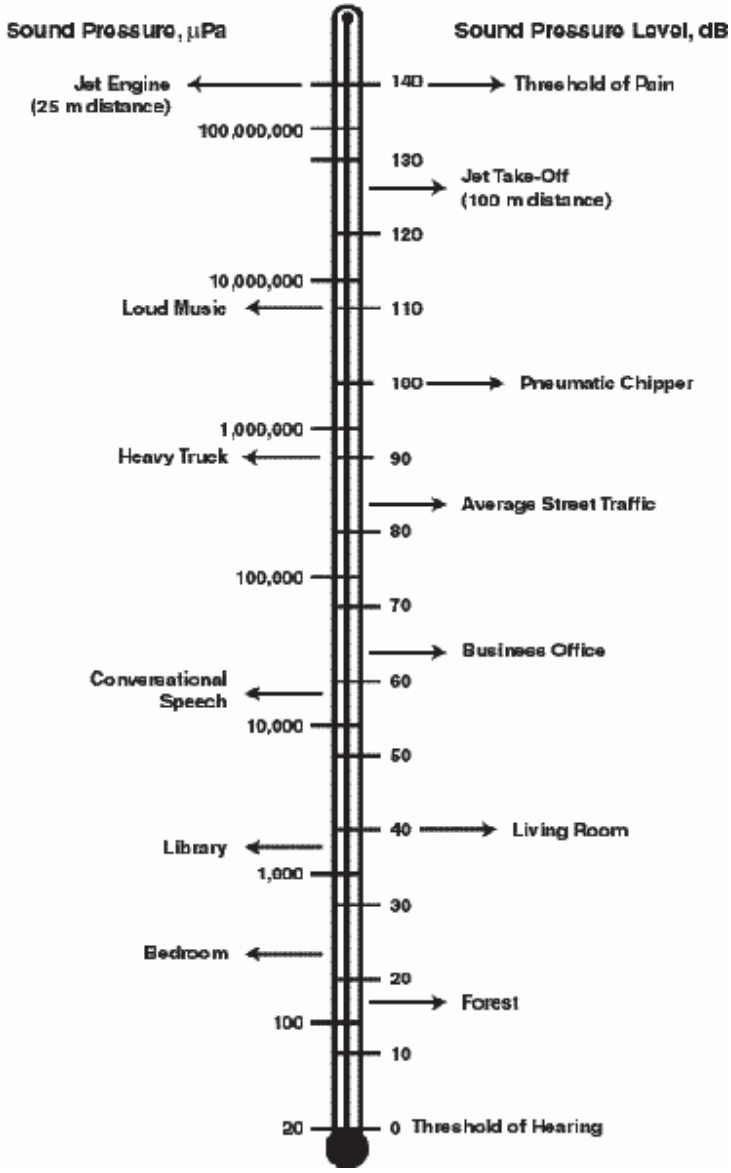
4.7. Permissible Exposure Limit

The OSHA Permissible Exposure Limits (PEL) is presently a 90dBA 8-hour time-weighted average exposure that can not be exceeded during any 8-hour work shift of a 40-hour workweek.

5. NOISE HAZARDS

Exposure to excessive levels of noise can result in permanent hearing loss, acuity, development of tinnitus (i.e., ringing of the ears), a possible increase in blood pressure, and stress-related problems. Noise may also cause annoyance or difficulty in communicating or working effectively and safely. A general guideline is that if you need to raise your voice to communicate with a co-worker at a normal conversation distance, then you may be in a noise hazard area.

The figure below shows the sound pressure levels on the decibel and log scales for various types of equipment and areas where such noise levels may be encountered.



6. NOISE EVALUATION

The Project Manager will identify work areas on his or her project where noise levels have the potential of equaling or exceeding 85 dBA (50% dose, see Definitions). These areas will be evaluated by the PSO and potentially exposed employees will be identified. Those areas where the noise levels can be shown to be below 85 dBA (50% dose, see Definitions) will not be routinely monitored. Identification of hazardous noise areas and equipment is the responsibility of the Project Manager but may be delegated to the PSO. (Item 2 and Item 3)

Signs will be posted at the entrance to any work area under Malcolm Pirnie control where noise levels exceed 85 dBA, requiring anyone entering the area to wear proper hearing protection. Personnel who work in these areas shall have hearing protection supplied to them, shall be instructed in its proper use, and be required to wear this equipment when in these areas. It is the responsibility of the Project Manager to ensure that these precautions are enforced.

6.1. Noise Measurements and Exposure Assessments

In order to effectively control noise it is necessary that the noise be accurately measured according to standard procedures and that the measurements are properly evaluated against accepted criteria. All noise monitoring will be conducted in accordance with established regulatory standards.

The monitoring of employees for noise exposure is made up of two parts, area and personal monitoring. This monitoring will include an evaluation of the specific noise environment in which hearing protection devices may be used. Area measurements are generally obtained first. If noise levels are at or above 85 dBA, then the PSO, in consultation with the Project Manager and the CHSM may be directed to conduct personal monitoring using dosimeters. All noise exposure monitoring data will be recorded and maintained. (Item 3)

6.2. Area Measurements

In an area survey, measurements of environmental noise levels are recorded using a sound-level meter to identify work areas where employees' exposures may be above hazardous levels. Area monitoring is conducted using a calibrated sound level meter set to the “A” scale, slow response. Within the area of interest, several different locations will be measured. Typical measurement locations would include:

- In the hearing zone at the employee's work location;
- Adjacent to the noise source(s);
- At the entrance(s) to the work area;
- At other locations within the area where the employee might spend time.

A rough sketch of the area will be included with the results showing the locations where the noise readings were obtained. If the noise levels are below 85 dBA in the area, no further routine monitoring will be required for that area. Should any of the noise measurements equal or exceed 85 dBA, records shall be maintained as to the noise levels recorded, where they were taken, and the source(s) of the noise. These records shall be updated regularly to determine if any changes have occurred that would warrant re-monitoring of exposed personnel.

6.3. Personal Monitoring

In some cases an employee’s Time-Weighted Average (TWA) noise exposure cannot be determined by the results of area sampling. Determination of the noise exposure level will be accomplished using calibrated noise dosimeters. The PSO will place a noise dosimeter on each employee to be monitored at the beginning of their normal work shift with the microphone placed in the "hearing zone”. The dosimeter will be worn for the full duration of the work shift.

At the end of the work shift, the PSO will remove the dosimeter and exposure data downloaded and printed, if capable. Background information will be collected during the testing for each employee detailing job description, unusual job activities, etc., for the time period sampled. Those employees whose noise exposure are equal to or exceed 85 dBA (50% dose) on an 8-hour TWA will be referred for inclusion in the Hearing Conservation Medical Surveillance Program.

6.4. Re-monitoring of Hazardous Noise Areas

Any area with noise levels that equal or exceed 85 dBA shall be re-monitored whenever a change in production process, equipment, or controls increase the noise exposure such that additional employees are exposed to noise levels at or above 85 dBA on a time-weighted average basis. Areas where the noise levels have dropped below 85 dBA shall be eliminated from the monitoring program.

7. NOISE EXPOSURE LIMITS

7.1. Eight-hour, Time-weighted Average (8-Hour TWA) Exposure Limits

The ACGIH has established a standard of 85 dBA (50% dose) (sound pressure in dB related to 20 µPa measured on the A-weighted scale) over an 8-hour day. Exposure to transient noise louder than 85 dBA is permitted, as long as the average exposure for the entire day is less than 85 dBA (50% dose).

OSHA's permissible exposure limits for specified exposure durations are summarized below. Table 1 shows the relationship between noise levels and permitted exposure periods.

Table 1. Threshold limit values for noise.a

	Duration/day	Sound level, dBAb
Hours	8	90
	6	92
	4	95
	3	97
	2	100
	1	105
Minutes	30	110
	15	115
	7.50c	120
	3.75c	125
	1.88c	130
	0.94c	135

a No exposure to continuous, intermittent, or impact noise in excess of a peak C-weighted level of 140 dB.
b Sound level in decibels are measured on a sound level meter, conforming as a minimum to the requirements of the American Standards Institute Specifications for Sound Level Meters, S1.4 (1983), Type S2A, and set to use the A-weighted network with slow meter response.
c Limited by the noise source, not by administrative controls.

7.2. Ultrasound Exposure Limits

The ACGIH has established standards for exposure to very high audible frequencies and frequencies above the range of human hearing (ultrasonic) (10 kHz to 100 kHz, as measured at the mid-frequency of the third octave band). Table 2 shows the TLV for ultrasound.

Table 2. Threshold limit values for ultrasound.

	One-third octave band level in dB (re 20 mPa)	
Mid-frequency of third octave band (kHz)	Ceiling Values	8-hour TWA
10	105[a]	88[a]
12.5	105[a]	89[a]
16	105[a]	92[a]
20	105[a]	94[a]
25	110	--
31.5	115	--
40	115	--
50	115	--
63	115	--
80	115	--
100	115	--
a Subjective annoyance and discomfort may occur in some individuals at levels between 75 and 105 dB for frequencies ranging from 10 kHz to 20 kHz, especially if they are tonal in nature. Hearing protection or engineering controls may be needed to prevent subjective effects. Tonal sounds in frequencies below 10 kHz might also need to be reduced to 80 dB.		

7.3. Permissible Speech Interference Level

In some cases, noise may not exceed standards established to protect hearing, but may interfere with the safe conduct of work. For example, nuisance noise can prevent effective communication between two or more people working together. It also can prevent employees from hearing or understanding safety instructions or other critical communications.

Most of the information conveyed through speech is in the mid-frequencies, from about 500 to 2000 Hz, which are used to determine how noise will interfere with speech. Noise levels above 60 dB can make telephone conversation difficult.

7.4. Nuisance Noise

Noise may be annoying because of its level, frequency, or aspects of its modulation. A noise may not be very loud, but its frequency may be high enough to cause headaches in susceptible individuals. Alternatively, a noise may not be that loud but may start and stop suddenly. This can disturb concentration or startle exposed personnel. Because there are no guidelines for annoying noise, each case will be examined independently to attempt to alleviate the irritation.

8. ENGINEERING AND ADMINISTRATIVE CONTROLS

8.1. Engineering Controls

The best way to limit noise exposure is to alter the noise-producing equipment or change the environment to reduce noise levels. Examples include replacing old, noisy equipment; increasing sound dampening around noisy equipment; and improving muffler design. Engineering controls shall be formally considered before other types of controls are implemented. Contact the CHSM for assistance in reviewing the options for engineering controls.

8.2. Administrative Controls

8.2.1. Measuring Noise

Project Managers who have project that may expose Malcolm Pirnie employees to loud noise will notify the CHSM. The CHSM will consult with the Project Manager and PSO to determine the advisability and the feasibility of conducting noise measurements to identify areas or specific operations that may produce excessive noise or to evaluate a employee's exposure to noise throughout an 8-hour day. The results of the measurements are used to determine which, if any, controls are appropriate to reduce employee exposure to noise.

8.2.2. Modifying Work Schedules

Noise exposure can be limited by altering work schedules. For example, a worker scheduled to work in the area of noisy equipment should perform these tasks over several days so that the average exposure each day does not exceed the permissible limit.

8.2.3. Posting Signs / Labels

Caution labels or signs should be posted on equipment or in areas under Malcolm Pirnie's control where it has been determined that noise levels may exceed 85 dBA. These signs should notify the employee of a potential noise hazard and specify the conditions under which hearing protectors are recommended or required. Caution labels and signs are particularly important where employees' duties require them to move among different locations or to use a variety of tools. The purpose and meaning of the signs shall be included in the training aspect of Malcolm Pirnie's Hearing Conservation Program.

9. HEARING PROTECTION DEVICES

Hearing protective devices (e.g., ear plugs, canal caps, and ear muffs) shall only be used after engineering and administrative measures have been implemented, when feasible, and further protection is still needed. They also may be used during the design and fabrication of suitable enclosures, sound damping materials, and isolation.

Whenever employees are subjected to noise exceeding 85 dBA over an 8-hour day, the Project Manager and the CHSM will assist in the design of feasible administrative and engineering controls and will re-evaluate the employee and his/her work area after implementation of the controls. If these controls fail to reduce the noise levels below the established limits, then hearing protection may be used to protect employees.

The CHSM or Project Manager shall provide employees affected by noise with earplugs or earmuffs as needed. The Project Manager may select hearing protectors for employees affected by noise at levels up to 85 dBA but should contact the CHSM to select the appropriate type of hearing protector for areas where exposure above 85 dBA is possible. In all cases, hearing protectors will provide adequate attenuation to prevent exposure to excessive noise levels and will be provided to employees at no cost. The Project Manager or the PSO will conduct surveillance of all work areas where hearing protection devices are used to ensure that they are being used in accordance with manufacturer specifications. (Item 9)

Hearing protectors have a "noise reduction rating" (NRR) number provided by the manufacturer. The NRR is a general guide to the level of noise reduction (in decibels) the protector provides in laboratory test situations if it is fitted and worn properly.

To determine the noise reduction of a hearing protector used in the workplace, subtract 7 dB from the NRR and apply a 50 percent safety factor. For example, hearing protectors with a NRR = 23 dB would provide a noise reduction of 8 dB when used in the workplace [(23 dB - 7 dB) x 0.5 = 8 dB].

Hearing protectors may also have a "noise reduction rating (subject fit)" or NRR (SF) number, which may be used without any correction.(Item 10)

9.1. Maintenance of Hearing Protective Devices

Reusable earplugs, such as the triple flange or formable devices, should be washed in lukewarm water using hand soap, rinsed in clean water, and dried thoroughly before use. Wet or damp earplugs should not be placed in their respective containers. Cleaning should be performed as needed.

Earmuff cushions should be kept clean. The plastic or foam cushions may be cleaned in the same way as earplugs, but do not allow the inside of the muff to get wet. Allow cushions to completely dry before storing.

9.2. Hearing Protection Performance Information

The maximum sound attenuation one gets when wearing hearing protection devices is limited by human body and bone conduction mechanisms. Even though a particular device may provide outstanding values of noise attenuation the actual noise reductions may be less because the noise surrounding the head and body bypasses the hearing-protective device and is transmitted through tissue and bone pathways to the inner ear.

The term "double hearing protection" is misleading. The attenuation provided from any combination earplug and earmuff is not equal to the sum of their individual attenuation values.

10. TRAINING (Item 1)

For each employee who is enrolled in the Hearing Conservation Program, employees will be trained in the use of various hearing protectors at the initial medical surveillance appointment or at the most convenient opportunity thereafter. Project Managers shall provide hearing protectors to all employees in the program and require them to use these devices while noise levels remain excessive.

Employees who are exposed to noise levels equaling or exceeding the 8-hour time-weighted average of 85 dBA (50% dose) will be trained in the use of hearing protective devices. This training covers the following:

- The effects of overexposure to noise on hearing.
- When and/or where hearing protection is required.
- The purpose of hearing protectors.
- The advantages, disadvantages, and attenuation of various types of protectors.
- Instructions on how to select, use, fit, and care for hearing protectors. (Item 9)
- The purpose of audiometric testing, including an explanation of the test procedures.
- Noise Induced Hearing Loss (NIHL)
- Explanation of noise measurement procedures

Additional training and follow-up annual retraining shall be provided based on the results of annual audiometric testing and the work activity involvement.

Training materials shall be updated as necessary when changes occur in hearing protection equipment and work practices. The noise exposure procedures will be posted in the workplace and made available to affected employees.

11. MEDICAL SURVEILLANCE (Item 4)

Medical surveillance examinations are conducted to monitor the hearing acuity of employees exposed to noise levels exceeding 85 dBA, at no cost to the employee. Medical surveillance is not routinely required for employees who are exposed to nuisance noise. Non-Malcolm Pirnie employees/subcontractors should receive medical surveillance through their employer. Equipment and training provided to Malcolm Pirnie employees may be available to some non- Malcolm Pirnie employees.

The CHSM will enroll Malcolm Pirnie employees exposed to noise above the established limits in the Hearing Conservation Program. This program shall meet all the requirements of 29 CFR 1910.95 and include:

- Annual training on the health effects of noise exposure and instructions on how to fit and wear hearing protectors.
- A baseline exam and annual follow-up audiometric testing.

11.1. Baseline Audiograms

A baseline audiogram will be conducted for each exposed employee within 6 months of initial exposure to noise levels at or exceeding 85 dBA. The CHSM will advise the employee of the need to schedule audiometric testing and advise employees to wear hearing protectors or avoid noisy environments for 14 hours prior to the test. (Item 5 and Item 6)

11.2. Follow-Up Audiograms

Subsequent annual follow-up audiometric testing will be conducted for each affected employee. The follow-up audiograms will be compared to the employee's baseline audiogram to ensure that the employee has not suffered has not suffered a significant threshold shift.

When compared to the baseline audiogram, if the follow-up test shows that a worker may have suffered a significant threshold shift, the Occupational Physician may schedule a retest within 30 days and consider the results of this test as the annual audiogram. The Occupational Physician will determine if the threshold shift is occupational or non-occupational and notify the employee in writing within 21 days of the determination. If the threshold shift is occupational, the Occupational Physician will: (Item 7)

Inform the CHSM of the possible need to re-evaluate the employee's work activities.
Assess the employee's level of knowledge in the types and use of hearing protection to augment knowledge deficits, that is, if the employee is already using hearing protectors. The CHSM can re-fit the employee with the current hearing protection used or modify the type of hearing protection provided. The CHSM will notify the Project Manager of the situation and provide such hearing protectors to the Project Manager for distribution or directly to the employees for use.

The Occupational Physician may also require the employee to undergo further clinical audiological evaluation or otological examination if it is determined that such an evaluation or examination is necessary, or if they suspect that a medical pathology of the ear is caused or aggravated by the wearing of hearing protectors. (Item 8)

12. RECORDKEEPING

12.1. Exposure Monitoring Records

In accordance with the requirements of 1910.1020(d), Access to Employee Exposure and Medical Records, Malcolm Pirnie shall retain the records for at least the following periods:

- 30 years for noise exposure monitoring records; or
- Duration of employment plus 30 years for medical monitoring records. (Item 11)

12.2. Training Records

Training for the use and maintenance of various hearing protectors should be documented in the site health and safety logbook. The CHSM will maintain a copy of all corporate training records. The training records maintained in the local office file will include the following information:

- The dates of the training sessions.
- The contents or a summary of the training sessions.
- The names and qualifications of persons conducting the training.
- The names and job titles of persons attending the training sessions.

Training records shall be maintained for three years from the date on which the training occurred. Upon request, employees will have access to any of his/her training records maintained by the local office and the CHSM.

All records kept under this Section are subject to OSHA employee record keeping requirements under 29 CFR 1910.1020.

12.3. Availability of Records

In accordance with 29 CFR 1910.1020(e), Access to Employee Exposure and Medical Records, Malcolm Pirnie will provide copies of the requested material to an employee, a former employee, or anyone having appropriate authorization for record access.

12.4. Transfer of Records

Malcolm Pirnie will comply with the requirements for the transfer of records as set forth in 29 CFR 1910.1020 (h).

APPENDIX G

Material Safety Data Sheet

Acetone

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Acetone

OTHER/GENERIC NAMES: Dimethylketone
2-Propanone

PRODUCT USE: Industrial

MANUFACTURER: General Chemical Corporation
90 East Halsey Road
Parsippany, NJ 07054

FOR MORE INFORMATION CALL: 973-515-1840
(Monday-Friday, 9:00am-4:30pm)

IN CASE OF EMERGENCY CALL: 800-631-8050
(24 Hours/Day, 7 Days/Week)

2. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT NAME	CAS NUMBER	WEIGHT %
Acetone	67-64-1	100

Trace impurities and additional material names not listed above may appear in Section 15 of this MSDS. These materials may be listed for local "Right-To-Know" compliance and for other reasons.

OSHA Hazard Communication Standard: *This product is considered hazardous under the OSHA Hazard Communication Standard.*

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: A colorless liquid with a sweetish, mint-like odor. May cause irritation to skin and eyes. May be harmful if inhaled or swallowed. Flammable.

POTENTIAL HEALTH HAZARDS

SKIN: Liquid can irritate after extensive contact, causing erythema (reddening of skin) or slight dermatitis.

EYES: Vapor may irritate. Liquid may irritate strongly.

INHALATION: Vapor irritates eyes, nose and throat. Greater exposure produces headaches, general intoxication, including incoordination or coma. Gross overexposure may result in respiratory depression and narcotic effect on the central nervous system.

INGESTION: If swallowed, it is likely to cause intoxication similar to that for inhalation.

DELAYED EFFECTS: None known.

Ingredients found on one of the three OSHA designated carcinogen lists are listed below.

INGREDIENT NAME	NTP STATUS	IARC STATUS	OSHA LIST
No ingredients listed in this section.			

4. FIRST AID MEASURES

SKIN: Promptly wash with plenty of soap and water. For extensive area of contact, remove contaminated clothing and shower. Wash clothing before reuse. Get medical attention if irritation persists.

EYES: Immediately flush eyes with plenty of water, continuing for at least 15 minutes. Get medical attention if irritation persists.

INHALATION: Immediately remove to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen provided a qualified operator is available. Get medical attention.

INGESTION: If conscious, immediately give 2 to 4 glasses of water and induce vomiting by touching back of throat with finger. Get medical attention immediately.

ADVICE TO PHYSICIAN: Treat symptomatically.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT:	-17.8C
FLASH POINT METHOD:	Closed Cup
AUTOIGNITION TEMPERATURE:	465-560C
UPPER FLAME LIMIT (volume % in air):	12.8
LOWER FLAME LIMIT (volume % in air):	2.6
FLAME PROPAGATION RATE (solids):	Not applicable
OSHA FLAMMABILITY CLASS:	Flammable liquid

EXTINGUISHING MEDIA:

Small fire: dry chemical or carbon dioxide. Large fire: water spray or “alcohol” foam. Avoid water in a straight hose stream which will scatter and spread fire, but may be used in large amounts to dilute spills to nonflammable mixtures.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Extremely flammable (0F flash point) with toxic decomposition products upon combustion. 10% acetone solution in water is reported to have an approximate 80F flash point. Flash back may occur along vapor trail. Explosion may result if vapors ignite in confined area.

SPECIAL FIRE FIGHTING PRECAUTIONS/INSTRUCTIONS:

Cool containers with water spray if exposed to fire. Wear self-contained, NIOSH-approved breathing apparatus and full protective clothing. After fire, flush area with water to prevent reignition.

6. ACCIDENTAL RELEASE MEASURES

IN CASE OF SPILL OR OTHER RELEASE: (See section 8 for recommended personal protective equipment.)
Remove all ignition sources. Provide ventilation. No smoking. Keep people away. Monitor with hose team and backup hose team. Shut off leak if without risk. Wear self-contained, NIOSH-approved breathing apparatus. Flush area with water spray and attempt to keep out of sewer.

Spills and releases may have to be reported to Federal and/or local authorities. See Section 15 regarding reporting requirements.

7. HANDLING AND STORAGE

NORMAL HANDLING: (See section 8 for recommended personal protective equipment.)
Keep away from heat, sparks and open flame. Avoid contact with eyes, skin and clothing. Use with adequate ventilation. Avoid spills and limit use in open containers. No smoking in area of use.

STORAGE RECOMMENDATIONS:
Store away from ignition sources in a well-ventilated, noncombustible structure equipped with automatic sprinklers or extinguishing system. Use safety cans for moderate quantities. Keep containers closed. Metal acetone storage containers should be grounded when transferring contents.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:
All handling should be done in a closed system (hood), which is customary in the semiconductor industry. Systems should be explosion-proof and capable of maintaining respiratory exposures at less than TLV recommended limit (500 ppm).

PERSONAL PROTECTIVE EQUIPMENT

SKIN PROTECTION:	For handling in a closed ventilation system recommended above, use protective gloves and apron of butyl rubber or polyvinyl acetate. For unusual situations where repeated or prolonged skin contact may be anticipated, add full protective clothing to prevent contact with liquid. Remove contaminated clothing promptly; wash and dry before reuse.
EYE PROTECTION:	For handling in a closed ventilation system recommended above, wear safety glasses with side shields. Add a full face shield when pouring liquid. For leak, spill or other emergency, use chemical safety goggles. Do not wear contact lenses.
RESPIRATORY PROTECTION:	None required if handled in a closed ventilation system recommended above. For leak, spill or other emergency where mist or vapor are evolved, use a NIOSH-approved self-contained breathing apparatus or air-supplied respirator with a full facepiece. For lower concentrations, a gas mask with organic vapor canister may be used.
ADDITIONAL RECOMMENDATIONS:	Provide eyewash and safety showers convenient to the workplace.

EXPOSURE GUIDELINES

INGREDIENT NAME	ACGIH TLV	OSHA PEL	OTHER LIMIT
Acetone	500 ppm TWA 750 ppm STEL	1000 ppm TWA	------

[1] = Limit established by General Chemical Corporation.
[2] = Workplace Environmental Exposure Level (AIHA).
[3] = Biological Exposure Index (ACGIH).

OTHER EXPOSURE LIMITS FOR POTENTIAL DECOMPOSITION PRODUCTS:
None.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Colorless liquid
PHYSICAL STATE: Liquid
MOLECULAR WEIGHT: 58.08
CHEMICAL FORMULA: CH_3COCH_3
ODOR: Sweetish, mint-like odor
SPECIFIC GRAVITY (water = 1.0): 0.79
SOLUBILITY IN WATER (weight %): Complete
pH: Approx. 7 (1 vol. acetone in 1 vol. water)
BOILING POINT: 56.2C
MELTING POINT: -95C
VAPOR PRESSURE: 180 mmHg @ 20C
VAPOR DENSITY (air = 1.0): 2.1
EVAPORATION RATE: 1.9 **COMPARED TO:** Ether
% VOLATILES: 100
FLASH POINT: -17.8C
(Flash point method and additional flammability data are found in Section 5.)

10. STABILITY AND REACTIVITY

NORMALLY STABLE? (CONDITIONS TO AVOID):
Stable under normal conditions. Containers may rupture when exposed to high heat such as a direct flame.

INCOMPATIBILITIES:
Reacts with strong oxidants, including halogens, and some acids.

HAZARDOUS DECOMPOSITION PRODUCTS:
Combustion products are carbon monoxide and carbon dioxide.

HAZARDOUS POLYMERIZATION:
Will not occur.

11. TOXICOLOGICAL INFORMATION

IMMEDIATE (ACUTE) EFFECTS:

Rabbit-skin: 395 mg / open skin / mild
Rabbit-eye: 20 mg / severe
LD_{50} (oral, rat): 5800 mg/kg
LC_{50} (inhl, rat): 50100 mg/m^3 / 8 hr

DELAYED (SUBCHRONIC AND CHRONIC) EFFECTS:

Data not available.

OTHER DATA:

None.

12. ECOLOGICAL INFORMATION

BOD5 (g/g): 0.31-1.63 Std. Dilution / Sewage Seed

Aquatic Toxicity: 14,250 ppm / 24 hr / sunfish / killed / tap water
13,000 ppm / 48 hr / mosquito fish / TLm / turbid water

13. DISPOSAL CONSIDERATIONS

RCRA

Is the unused product a RCRA hazardous waste if discarded? Yes

If yes, the RCRA ID number is: U002

OTHER DISPOSAL CONSIDERATIONS:

The information offered in section 13 is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method.

14. TRANSPORT INFORMATION

US DOT HAZARD CLASS: 3, PG II
US DOT ID NUMBER: UN 1090
PROPER SHIPPING NAME: Acetone

For additional information on shipping regulations affecting this material, contact the information number found in Section 1.

15. REGULATORY INFORMATION

TOXIC SUBSTANCES CONTROL ACT (TSCA)

TSCA INVENTORY STATUS: Listed on the TSCA Inventory.

OTHER TSCA ISSUES: TSCA 12(b) Export Notification required.

SARA TITLE III/CERCLA

"Reportable Quantities" (RQs) and/or "Threshold Planning Quantities" (TPQs) exist for the following ingredients.

INGREDIENT NAME	SARA/CERCLA RQ (lb)	SARA EHS TPQ (lb)
Acetone	5000	------

Spills or releases resulting in the loss of any ingredient at or above its RQ requires immediate notification to the National Response Center [(800) 424-8802] and to your Local Emergency Planning Committee.

SECTION 311 HAZARD CLASS: Immediate. Fire.

SARA 313 TOXIC CHEMICALS:
The following ingredients are SARA 313 "Toxic Chemicals" and may be subject to annual reporting requirements. CAS numbers and weight percents are found in Section 2.

INGREDIENT NAME	COMMENT
No ingredients listed in this section.	

STATE RIGHT-TO-KNOW

In addition to the ingredients found in Section 2, the following are listed for state right-to-know purposes.

INGREDIENT NAME	WEIGHT %	COMMENT
No ingredients listed in this section.		

ADDITIONAL REGULATORY INFORMATION:
DEA Precursor and Essential Chemical [21 CFR 1310.04(f)]

WHMIS CLASSIFICATION (CANADA):
B2, D2B

FOREIGN CHEMICAL CONTROL INVENTORY STATUS:
Listed on EU EINECS and Canadian DSL.

16. OTHER INFORMATION

CURRENT ISSUE DATE: January, 2002
PREVIOUS ISSUE DATE: August, 1996

CHANGES TO MSDS FROM PREVIOUS ISSUE DATE ARE DUE TO THE FOLLOWING:
Change in format.

OTHER INFORMATION: None

ALCONOX MSDS

Section 1 : MANUFACTURER INFORMATION

Product name: Alconox

Supplier: Same as manufacturer.

Manufacturer: Alconox, Inc.
30 Glenn St.
Suite 309
White Plains, NY 10603.

Manufacturer emergency phone number: 800-255-3924.
813-248-0585 (outside of the United States).

Manufacturer: Alconox, Inc.
30 Glenn St.
Suite 309
White Plains, NY 10603.

Supplier MSDS date: 2005/03/09

D.O.T. Classification: Not regulated.

Section 2 : HAZARDOUS INGREDIENTS

C.A.S.	CONCENTRATION %	Ingredient Name	T.L.V.	LD/50	LC/50
25155-30-0	10-30	SODIUM DODECYLBENZENESULFONATE	NOT AVAILABLE	438 MG/KG RAT ORAL 1330 MG/KG MOUSE ORAL	NOT AVAILABLE
497-19-8	7-13	SODIUM CARBONATE	NOT AVAILABLE	4090 MG/KG RAT ORAL 6600 MG/KG MOUSE ORAL	2300 MG/M3/2H RAT INHALATION 1200 MG/M3/2H MOUSE INHALATION
7722-88-5	10-30	TETRASODIUM PYROPHOSPHATE	5 MG/M3	4000 MG/KG RAT ORAL 2980 MG/KG MOUSE ORAL	NOT AVAILABLE
7758-29-4	10-30	SODIUM PHOSPHATE	NOT AVAILABLE	3120 MG/KG RAT ORAL 3100 MG/KG MOUSE ORAL >4640 MG/KG RABBIT DERMAL	NOT AVAILABLE

Section 2A : ADDITIONAL INGREDIENT INFORMATION

Note: (supplier).
CAS# 497-19-8: LD50 4020 mg/kg - rat oral.
CAS# 7758-29-4: LD50 3100 mg/kg - rat oral.

Section 3 : PHYSICAL / CHEMICAL CHARACTERISTICS

Physical state: Solid

Appearance & odor: Almost odourless.
White granular powder.

Odor threshold (ppm): Not available.

Vapour pressure (mmHg): Not applicable.

Vapour density (air=1): Not applicable.

By weight: Not available.

Evaporation rate (butyl acetate = 1): Not applicable.

Boiling point (°C): Not applicable.

Freezing point (°C): Not applicable.

pH: (1% aqueous solution).
9.5

Specific gravity @ 20 °C: (water = 1).
0.85 - 1.10

Solubility in water (%): 100 - > 10% w/w

Coefficient of water\oil dist.: Not available.

VOC: None

Section 4 : FIRE AND EXPLOSION HAZARD DATA

Flammability: Not flammable.

Conditions of flammability: Surrounding fire.

Extinguishing media: Carbon dioxide, dry chemical, foam.
Water
Water fog.

Special procedures: Self-contained breathing apparatus required.
Firefighters should wear the usual protective gear.

Auto-ignition temperature: Not available.

Flash point (°C), method: None

Lower flammability limit (% vol): Not applicable.

Upper flammability limit (% vol): Not applicable.

Not available.

Sensitivity to mechanical impact: Not applicable.

Hazardous combustion products: Oxides of carbon (COx).
Hydrocarbons.

Rate of burning: Not available.

Explosive power: None

Section 5 : REACTIVITY DATA

Chemical stability:	Stable under normal conditions.
Conditions of instability:	None known.
Hazardous polymerization:	Will not occur.
Incompatible substances:	Strong acids. Strong oxidizers.
Hazardous decomposition products:	See hazardous combustion products.

Section 6 : HEALTH HAZARD DATA

Route of entry:	Skin contact, eye contact, inhalation and ingestion.
Effects of Acute Exposure	
Eye contact:	May cause irritation.
Skin contact:	Prolonged contact may cause irritation.
Inhalation:	Airborne particles may cause irritation.
Ingestion:	May cause vomiting and diarrhea. May cause abdominal pain. May cause gastric distress.
Effects of chronic exposure:	Contains an ingredient which may be corrosive.
LD50 of product, species & route:	> 5000 mg/kg rat oral.
LC50 of product, species & route:	Not available for mixture, see the ingredients section.
Exposure limit of material:	Not available for mixture, see the ingredients section.
Sensitization to product:	Not available.
Carcinogenic effects:	Not listed as a carcinogen.
Reproductive effects:	Not available.
Teratogenicity:	Not available.
Mutagenicity:	Not available.
Synergistic materials:	Not available.
Medical conditions aggravated by exposure:	Not available.
First Aid	
Skin contact:	Remove contaminated clothing. Wash thoroughly with soap and water. Seek medical attention if irritation persists.
Eye contact:	Check for and remove contact lenses. Flush eyes with clear, running water for 15 minutes while holding eyelids open: if irritation persists, consult a physician.
Inhalation:	Remove victim to fresh air. Seek medical attention if symptoms persist.
Ingestion:	Dilute with two glasses of water. Never give anything by mouth to an unconscious person. Do not induce vomiting, seek immediate medical attention.

Section 7 : PRECAUTIONS FOR SAFE HANDLING AND USE

Leak / Spill: Contain the spill.
Recover uncontaminated material for re-use.
Wear appropriate protective equipment.
Contaminated material should be swept or shoveled into appropriate waste container for disposal.

Waste disposal: In accordance with municipal, provincial and federal regulations.

Handling procedures and equipment: Protect against physical damage.
Avoid breathing dust.
Wash thoroughly after handling.
Keep out of reach of children.
Avoid contact with skin, eyes and clothing.
Launder contaminated clothing prior to reuse.

Storage requirements: Keep containers closed when not in use.
Store away from strong acids or oxidizers.
Store in a cool, dry and well ventilated area.

Section 8 : CONTROL MEASURES

Precautionary Measures

Gloves / Type:

Neoprene or rubber gloves.

Respiratory / Type:

If exposure limit is exceeded, wear a NIOSH approved respirator.

Eye / Type:

Safety glasses with side-shields.

Footwear / Type: Safety shoes per local regulations.

Clothing / Type: As required to prevent skin contact.

Other / Type: Eye wash facility should be in close proximity.
Emergency shower should be in close proximity.

Ventilation requirements: Local exhaust at points of emission.

ALCONOX

LIQUI-NOX

Section 1 : MANUFACTURER INFORMATION

Supplier: Same as manufacturer.

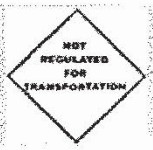
Manufacturer: Alconox, Inc.
30 Glenn St. Suite 309
White Plains, NY 10603.

Manufacturer emergency phone number: 800-255-3924.
813-248-0573 (outside of the United States).

Manufacturer: Alconox, Inc.
30 Glenn St. Suite 309
White Plains, NY 10603.

Supplier MSDS date: 2003/10/23

D.O.T. Classification: Not regulated.



Section 2 : HAZARDOUS INGREDIENTS

C.A.S.	CONCENTRATION %	Ingredient Name	T.L.V.	LD/50	LC/50
25155-30-0	10-30	SODIUM DODECYLBENZENESULFONATE	NOT AVAILABLE	438 MG/KG RAT ORAL 1330 MG/KG MOUSE ORAL	NOT AVAILABLE

Section 3 : PHYSICAL / CHEMICAL CHARACTERISTICS

Physical state: Liquid.

Appearance & odor: Odourless.
Pale yellow.

Odor threshold (ppm): Not available.

Vapour pressure (mmHg): @ 68F (20C).
17

Vapour density (air=1): >1

Volatiles (%)

By volume: Not available.

Evaporation rate (butyl acetate = 1): < 1.

Boiling point (°C):	100 (212F)
Freezing point (°C):	Not available.
pH:	8.5
Specific gravity @ 20 °C:	(water = 1). 1.083
Solubility in water (%):	Complete.
Coefficient of water\oil dist.:	Not available.
VOC:	None

Section 4 : FIRE AND EXPLOSION HAZARD DATA

Flammability:	Not flammable.
Conditions of flammability:	Surrounding fire.
Extinguishing media:	Carbon dioxide, dry chemical, foam. Water Water fog.
Special procedures:	Self-contained breathing apparatus required. Firefighters should wear the usual protective gear. Use water spray to cool fire exposed containers.
Auto-ignition temperature:	Not available.
Flash point (°C), method:	None
Lower flammability limit (% vol):	Not applicable.
Upper flammability limit (% vol):	Not applicable.

Not available.

Sensitivity to mechanical impact:	Not available.
Hazardous combustion products:	Oxides of carbon (COx). Hydrocarbons.
Rate of burning:	Not available.
Explosive power:	Containers may rupture if exposed to heat or fire.

Section 5 : REACTIVITY DATA

Chemical stability:	Product is stable under normal handling and storage conditions.
Conditions of instability:	Extreme temperatures.
Hazardous polymerization:	Will not occur.
Incompatible substances:	Strong acids. Strong oxidizing agents.
Hazardous decomposition products:	See hazardous combustion products.

Section 6 : HEALTH HAZARD DATA

Route of entry: Skin contact, eye contact, inhalation and ingestion.

Effects of Acute Exposure

Eye contact: May cause irritation.

Skin contact: Prolonged and repeated contact may cause irritation.

Inhalation: May cause headache and nausea.

Ingestion: May cause vomiting and diarrhea.
May cause gastric distress.

Effects of chronic exposure: See effects of acute exposure.

LD50 of product, species & route: > 5000 mg/kg – rat oral.

LC50 of product, species & route: Not available.

Exposure limit of material: Not available.

Sensitization to product: Not available.

Carcinogenic effects: Not listed as a carcinogen.

Reproductive effects: Not available.

Teratogenicity: Not available.

Mutagenicity: Not available.

Synergistic materials: Not available.

Medical conditions aggravated by exposure: Not available.

First Aid

Skin contact: Remove contaminated clothing.
Wash thoroughly with soap and water.
Seek medical attention if irritation persists.

Eye contact: Check for and remove contact lenses.
Flush eyes with clear, running water for 15 minutes while holding eyelids open: if irritation persists, consult a physician.

Inhalation: Remove victim to fresh air.
If irritation persists, seek medical attention.

Ingestion: Do not induce vomiting, seek medical attention.
Dilute with two glasses of water.
Never give anything by mouth to an unconscious person.

Section 7 : PRECAUTIONS FOR SAFE HANDLING AND USE

Leak/Spill: Contain the spill.
Soak up with an absorbent material.
Prevent entry into drains, sewers, and other waterways.
Wear appropriate protective equipment.
Small amounts may be flushed to sewer with water.
Place in appropriate container for disposal.
Notify the appropriate authorities as required.

Waste disposal:	In accordance with local and federal regulations.
Handling procedures and equipment:	Protect against physical damage. Avoid breathing vapors/mists. Wear personal protective equipment appropriate to task. Wash thoroughly after handling. Keep out of reach of children. Avoid contact with skin, eyes and clothing. Avoid extreme temperatures. Launder contaminated clothing prior to reuse.
Storage requirements:	Store away from incompatible materials. Keep containers closed when not in use.

Section 8 : CONTROL MEASURES

Precautionary Measures

Gloves/Type:

Wear appropriate gloves.

Respiratory/Type: None required under normal use.

Eye/Type:

Safety glasses recommended.

Footwear/Type: Safety shoes per local regulations.

Clothing/Type: As required to prevent skin contact.

Other/Type: Eye wash facility should be in close proximity.
Emergency shower should be in close proximity.

Ventilation requirements: Local exhaust at points of emission.

MSDS Number: **M2015** * * * * * *Effective Date:* ***08/10/04*** * * * * * *Supercedes:* ***11/12/01***

MSDS Material Safety Data Sheet

From: **Mallinckrodt Baker, Inc.**
222 Red School Lane
Phillipsburg, NJ 08865

Mallinckrodt CHEMICALS | J.T.Baker

24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300

National Response in Canada
CANUTEC: 613-996-6666

Outside U.S. and Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

METHYL ALCOHOL

1. Product Identification

Synonyms: Wood alcohol; methanol; carbinol
CAS No.: 67-56-1
Molecular Weight: 32.04
Chemical Formula: CH3OH
Product Codes:
J.T. Baker: 5217, 5370, 5595, 5794, 5811, 5842, 5869, 9049, 9063, 9065, 9066, 9067, 9069, 9070, 9071, 9073, 9075, 9076, 9077, 9091, 9093, 9096, 9097, 9098, 9263, 9822, 9830, V654
Mallinckrodt: 3004, 3006, 3016, 3017, 3018, 3024, 3041, 3701, 4295, 5160, 8814, H080, H488, H603, H985, V079, V571

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Methyl Alcohol	67-56-1	100%	Yes

3. Hazards Identification

Emergency Overview

POISON! DANGER! VAPOR HARMFUL. MAY BE FATAL OR CAUSE BLINDNESS IF SWALLOWED. HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. CANNOT BE MADE NONPOISONOUS. FLAMMABLE LIQUID AND VAPOR. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. AFFECTS CENTRAL NERVOUS SYSTEM AND LIVER.

SAF-T-DATA(tm) Ratings (Provided here for your convenience)

Health Rating: 3 - Severe (Poison)
Flammability Rating: 3 - Severe (Flammable)
Reactivity Rating: 1 - Slight
Contact Rating: 3 - Severe (Life)
Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES; CLASS B EXTINGUISHER
Storage Color Code: Red (Flammable)

Potential Health Effects

Inhalation:
A slight irritant to the mucous membranes. Toxic effects exerted upon nervous system, particularly the optic nerve. Once absorbed into the body, it is very slowly eliminated. Symptoms of overexposure may include headache, drowsiness, nausea, vomiting, blurred vision, blindness, coma, and death. A person may get better but then worse again up to 30 hours later.
Ingestion:
Toxic. Symptoms parallel inhalation. Can intoxicate and cause blindness. Usual fatal dose: 100-125 milliliters.
Skin Contact:
Methyl alcohol is a defatting agent and may cause skin to become dry and cracked. Skin absorption can occur; symptoms may parallel inhalation exposure.
Eye Contact:
Irritant. Continued exposure may cause eye lesions.
Chronic Exposure:
Marked impairment of vision has been reported. Repeated or prolonged exposure may cause skin irritation.
Aggravation of Pre-existing Conditions:
Persons with pre-existing skin disorders or eye problems or impaired liver or kidney function may be more susceptible to the effects of the substance.

---

4. First Aid Measures

Inhalation:
Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get

medical attention immediately.
Ingestion:
Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.
Skin Contact:
Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.
Eye Contact:
Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

---

5. Fire Fighting Measures

Fire:
Flash point: 12C (54F) CC
Autoignition temperature: 464C (867F)
Flammable limits in air % by volume:
lel: 6.0; uel: 36
Flammable Liquid and Vapor!
Explosion:
Above flash point, vapor-air mixtures are explosive within flammable limits noted above. Moderate explosion hazard and dangerous fire hazard when exposed to heat, sparks or flames. Sensitive to static discharge.
Fire Extinguishing Media:
Use alcohol foam, dry chemical or carbon dioxide. (Water may be ineffective.)
Special Information:
In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Use water spray to blanket fire, cool fire exposed containers, and to flush non-ignited spills or vapors away from fire. Vapors can flow along surfaces to distant ignition source and flash back.

---

6. Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! If a leak or spill has not ignited, use water spray to disperse the vapors, to protect personnel attempting to stop leak, and to flush spills away from exposures. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

J. T. Baker SOLUSORB® solvent adsorbent is recommended for spills of this product.

---

7. Handling and Storage

Protect against physical damage. Store in a cool, dry well-ventilated location, away from any area where the fire hazard may be acute. Outside or detached storage is preferred. Separate from incompatibles. Containers should be bonded and grounded for transfers to avoid static sparks. Storage and use areas should be No Smoking areas. Use non-sparking type tools and equipment, including explosion proof ventilation. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product. Do Not attempt to clean empty containers since residue is difficult to remove. Do not pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, sparks, flame, static electricity or other sources of ignition: they may explode and cause injury or death.

---

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:
For Methyl Alcohol:
- OSHA Permissible Exposure Limit (PEL):
200 ppm (TWA)
- ACGIH Threshold Limit Value (TLV):
200 ppm (TWA), 250 ppm (STEL) skin

Ventilation System:
A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details. Use explosion-proof equipment.

Personal Respirators (NIOSH Approved):
If the exposure limit is exceeded and engineering controls are not feasible, wear a supplied air, full-facepiece respirator, airlined hood, or full-facepiece self-contained breathing apparatus. Breathing air quality must meet the requirements of the OSHA respiratory protection standard (29CFR1910.134). This substance has poor warning properties.

Skin Protection:
Rubber or neoprene gloves and additional protection including impervious boots, apron, or coveralls, as needed in areas of unusual exposure.

Eye Protection:
Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

---

9. Physical and Chemical Properties

Appearance:
Clear, colorless liquid.

Odor:
Characteristic odor.

Solubility:
Miscible in water.

Specific Gravity:
0.8

pH:
No information found.
% Volatiles by volume @ 21C (70F):
100
Boiling Point:
64.5C (147F)
Melting Point:
-98C (-144F)
Vapor Density (Air=1):
1.1
Vapor Pressure (mm Hg):
97 @ 20C (68F)
Evaporation Rate (BuAc=1):
5.9

---

10. Stability and Reactivity

Stability:
Stable under ordinary conditions of use and storage.
Hazardous Decomposition Products:
May form carbon dioxide, carbon monoxide, and formaldehyde when heated to decomposition.
Hazardous Polymerization:
Will not occur.
Incompatibilities:
Strong oxidizing agents such as nitrates, perchlorates or sulfuric acid. Will attack some forms of plastics, rubber, and coatings. May react with metallic aluminum and generate hydrogen gas.
Conditions to Avoid:
Heat, flames, ignition sources and incompatibles.

---

11. Toxicological Information

Methyl Alcohol (Methanol) Oral rat LD50: 5628 mg/kg; inhalation rat LC50: 64000 ppm/4H; skin rabbit LD50: 15800 mg/kg; Irritation data-standard Draize test: skin, rabbit: 20mg/24 hr. Moderate; eye, rabbit: 100 mg/24 hr. Moderate. Investigated as a mutagen, reproductive effector.

--------\Cancer Lists\----------

	---NTP Carcinogen---		
Ingredient	Known	Anticipated	IARC Category
Methyl Alcohol (67-56-1)	No	No	None

---

12. Ecological Information

Environmental Fate:
When released into the soil, this material is expected to readily biodegrade. When released into the soil, this material is expected to leach into groundwater. When released into the soil, this material is expected to quickly evaporate. When released into the water, this material is expected to have a half-life between 1

and 10 days. When released into water, this material is expected to readily biodegrade. When released into the air, this material is expected to exist in the aerosol phase with a short half-life. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals. When released into air, this material is expected to have a half-life between 10 and 30 days. When released into the air, this material is expected to be readily removed from the atmosphere by wet deposition.

Environmental Toxicity:

This material is expected to be slightly toxic to aquatic life.

---

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved incinerator or disposed in a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

---

14. Transport Information

Domestic (Land, D.O.T.)

Proper Shipping Name: METHANOL
Hazard Class: 3
UN/NA: UN1230
Packing Group: II
Information reported for product/size: 358LB

International (Water, I.M.O.)

Proper Shipping Name: METHANOL
Hazard Class: 3, 6.1
UN/NA: UN1230
Packing Group: II
Information reported for product/size: 358LB

---

15. Regulatory Information

--------\Chemical Inventory Status - Part 1\---------

Ingredient	TSCA	EC	Japan	Australia
Methyl Alcohol (67-56-1)	Yes	Yes	Yes	Yes

--------\Chemical Inventory Status - Part 2\---------

	--Canada--			
Ingredient	Korea	DSL	NDSL	Phil.

Methyl Alcohol (67-56-1)	Yes	Yes	No	Yes

--------\Federal, State & International Regulations - Part 1\----------

Ingredient	-SARA 302- RQ	TPQ	------SARA 313------ List	Chemical Catg.
Methyl Alcohol (67-56-1)	No	No	Yes	No

--------\Federal, State & International Regulations - Part 2\----------

Ingredient	-RCRA- CERCLA	261.33	-TSCA- 8(d)
Methyl Alcohol (67-56-1)	5000	U154	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic: Yes Fire: Yes Pressure: No
Reactivity: No (Pure / Liquid)

Australian Hazchem Code: 2PE
Poison Schedule: S6
WHMIS:
This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

1.0 16. Other Information

NFPA Ratings: Health: **1** Flammability: **3** Reactivity: **0**
Label Hazard Warning:
POISON! DANGER! VAPOR HARMFUL. MAY BE FATAL OR CAUSE BLINDNESS IF SWALLOWED. HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. CANNOT BE MADE NONPOISONOUS. FLAMMABLE LIQUID AND VAPOR. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. AFFECTS CENTRAL NERVOUS SYSTEM AND LIVER.
Label Precautions:
Avoid breathing vapor.
Avoid contact with eyes, skin and clothing.
Wash thoroughly after handling.
Keep container closed.
Use only with adequate ventilation.
Keep away from heat, sparks and flame.
Label First Aid:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. In all cases get medical attention immediately.
Product Use:
Laboratory Reagent.

Revision Information:
No Changes.
Disclaimer:
****
****
Mallinckrodt Baker, Inc. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. MALLINCKRODT BAKER, INC. MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE INFORMATION SET FORTH HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS. ACCORDINGLY, MALLINCKRODT BAKER, INC. WILL NOT BE RESPONSIBLE FOR DAMAGES RESULTING FROM USE OF OR RELIANCE UPON THIS INFORMATION.
****
****
Prepared by: Environmental Health & Safety
Phone Number: (314) 654-1600 (U.S.A.)

APPENDIX H

MALCOLM PIRNIE

INCIDENT/NEAR MISS INVESTIGATION

INTRODUCTION

Malcolm Pirnie, Inc. is committed to providing a workplace that is safe, healthful and free from recognized hazards. A thorough investigation of each incident should be conducted to determine root causes, contributing circumstances, to select corrective actions, and to limit the liability of individual employees and the company.

A comprehensive Incident Investigation provides objective information about the circumstances surrounding a workplace incident.

PROGRAM OBJECTIVE

The Incident Investigation Program is an important management tool to develop accurate worker compensation claim information, to minimize lost work time and medical costs, and to highlight and correct gaps in health and safety programs, training and motivation.

RESPONSIBILITIES

The Incident Reporting Form (Appendix A) is to be completed for each Malcolm Pirnie employee involved in an incident or a near miss (potential incident) or when equipment is damaged in excess of $500. The **employee's immediate supervisor is responsible for ensuring the completion of the Incident Reporting Form**. See Malcolm Pirnie's Incident/Illness Record keeping Program.

PROGRAM FORMS

The following forms and instructions are designed to assist in the uniform completion of the Incident Investigation.

There are four forms to complete the investigation process:

- Choosing an Incident Investigation Team
- Initial Notification and Data Gathering Worksheet
- The 5 Why's – Root Cause Analysis Job Aid
- Corrective Action and Follow-up Worksheet

Each Form Heading:

Please write in the name of the MPI Region and office the employee was working in at the time of the incident. Write in the project number (if applicable), the employee's supervisor on the project and the date of the incident. Identify the Case Type as Non-Recordable and its type(s) or Recordable and its type(s). Medical Treatment refers to an injury that requires off-site treatment.

CHOOSING AN INCIDENT INVESTIGATION TEAM:

A team should be identified within 30 days of the actual incident and consist of at a minimum, ***the injured employee and the injured employee's supervisor.***

INITIAL NOTIFICATION AND DATA GATHERING WORKSHEET

Complete the information required in this section so that a person not present can easily understand the circumstances and environment in which the accident, illness or incident occurred. Use more paper if necessary. Include a sketch or attach photographs if available. Could the results of this incident have had consequences that could be described as major, serious or minor?

We investigate the facts surrounding the actual incident. Testimony should be sought from the victim and any witnesses prior to completing this section. Include the names and phone numbers of any witness to the incident.

THE 5 WHY'S – ROOT CAUSE ANALYSIS JOB AID

This form is helpful in determining the main (root) cause of the incident.

CORRECTIVE ACTION AND FOLLOW-UP WORKSHEET

After the investigator evaluates the potential causes of the incident, what are corrective measures that may have to be implemented to prevent a reoccurrence? Many other possibilities exist and write-in responses are encouraged.

This form is designed to allow all who read this document to learn from the experience and to assist management in developing corrective policies, procedures, facilities, equipment, or training to prevent the same series of circumstances from occurring again.

For further information, contact the Manager, Health and Safety, WHI

APPENDIX A

CHOOSING AN INCIDENT INVESTIGATION TEAM

CHOOSING AN INCIDENT INVESTIGATION TEAM

Remember when choosing an Incident Investigation Team:

1. Size depends on the seriousness or potential seriousness of each incident. Size can vary from a minimum of 2 for a minor incident to a maximum 8-10 for a serious incident.
2. Additional team members should be added based on their perspective or qualifications that will add value to the investigation.
3. Consider departments that may have a significant involvement in any corrective actions that may result from the incident.
4. Our organization's expectations are:

_____

_____

_____

Fill in the blanks below when determining your Incident Investigation Team for an incident.

Incident location:	Date of Incident:
Employee(s) involved:	

	Date	Time	Location
Team Meeting:			

Investigation Team	Name	Phone	Department
Team Leader:			

Comments: _____

MPI Region and office _____ Project Number (if applicable) _____

Employee's Supervisor _____

Case Type: ☐ Recordable ☐ Non-Recordable Medical Treatment ☐ Yes ☐ No

Person filling out this form _____ Date _____

APPENDIX B

INITIAL NOTIFICATION AND DATA GATHERING WORKSHEET

INITIAL NOTIFICATION AND DATA GATHERING WORKSHEET

Initial Notification:

Internal Notifications Typical: Health & Safety Dept Supervisor, Branch Manager, Project Officer, HR, Legal, etc.	External Notifications Typical: Family, Government Agencies, and local emergency response agencies.

Preliminary Data Gathering:

Typical categories: date, time, and location of incident; condition of work area (clues such as debris, blood, etc.); location of objects that may have contributed to the incident; employees present to see what happened;

Category	Information

Items to note when gathering data and possible questions to ask the involved employee(s) or witnesses: (Add others or delete those not appropriate for your company.)

1. Where were you when the incident occurred? What were you doing?
2. What did you see? What did you hear?
3. What tools were being used? (Were proper tools being used?)
4. What did the location look like? (Did poor housekeeping or other physical conditions contribute to the incident? Was a recognized or unrecognized hazard present?)
5. Were all switches, dials, controls, and computer software in the correct position?
6. What protective equipment was in use? Was it being used properly?

Comments: _____

MPI Region and office _____ Project Number (if applicable) _____

Employee's Supervisor _____

Case Type: ☐ Recordable ☐ Non-Recordable Medical Treatment ☐ Yes ☐ No

Person filling out this form _____ Date _____

APPENDIX C

THE 5 WHY'S – ROOT CAUSE ANALYSIS JOB AID

THE 5 WHY'S – ROOT CAUSE ANALYSIS JOB AID

Steps in using the 5 Why's Root Cause Analysis Method:

1. Start with the undesired event.
2. Ask: "Why did the incident happen"? This is typically the direct cause.
3. Ask: "Why did that happen"? or "Why did that occur?" This is often a contributing causes.
4. Ask: "Why did that happen"? or "Why did this occur?" There may be other contributing causes.
5. Continue asking "Why?" 5 or 6 times. You should get to the root cause by the answer to the 5th or 6th why question.

Use the form below to help you determine the Root Cause of an incident.

Incident Location:		Date of Incident:
Employee(s) Involved:		

Undesired Event:	Describe briefly what the event was:

Why did the incident happen? (direct cause) _____

Why did that happen? (contributing cause) _____

Why did that occur? (contributing cause) _____

Why did this happen? (contributing cause) _____

Why did this occur? (contributing cause) _____

ROOT CAUSE: _____

MPI Region and office _____ Project Number (if applicable) _____

Employee's Supervisor _____

Case Type ☐ Recordable ☐ Non-Recordable Medical Treatment ☐ Yes ☐ No

Person filling out this form _____ Date _____

APPENDIX D

CORRECTIVE ACTION AND FOLLOW-UP WORKSHEET

CORRECTIVE ACTION AND FOLLOW-UP WORKSHEET

Team Leader: _____

Incident Location:		**Date of Incident:**	
Employee(s) Involved:			

Causes	**Corrective Action**	**Individual Responsible**	**Planned Completion Date**	**Follow-up Date**	**Comments**
Root Cause	Immediate:				
	Long Term:				
Contributing Causes(s)	Immediate:				
	Long Term:				
Direct Cause (if applicable)	Immediate:				
	Long Term:				

Follow-up: Plan to Follow-up on all Corrective Actions within **3 Months** after completion of the investigation to ensure effectiveness.

Communications: List people and places that need to get this information. (Who from the Initial Notification lists needs this information? What other people, departments, groups, offices, etc. can benefit from this information?

MPI Region and office:

Project Number (if applicable)

Employee's Supervisor:

Case Type: ☐ Recordable ☐ Non-recordable Medical Treatment? ☐ Yes ☐ No

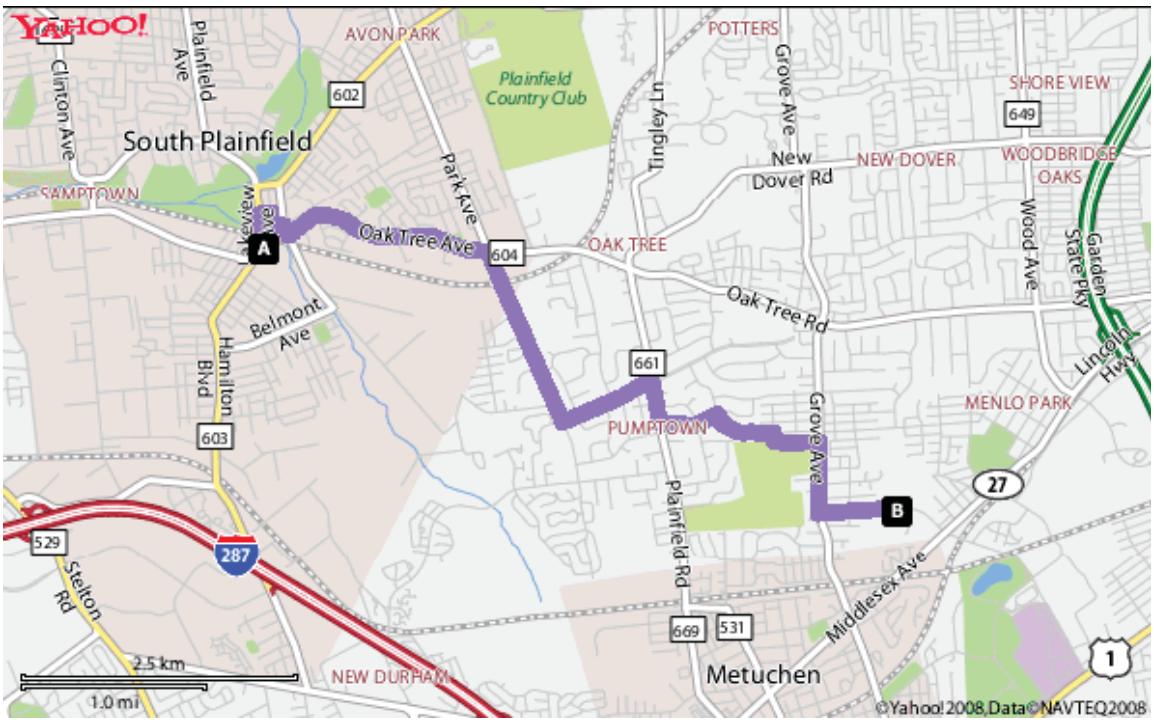
Person filling out this form: Date:

R2-0000201

APPENDIX I

HOSPITAL DIRECTIONS

Directions to: JFK Medical Center 65 James St, Edison, NJ 08818 (732-321-7000)



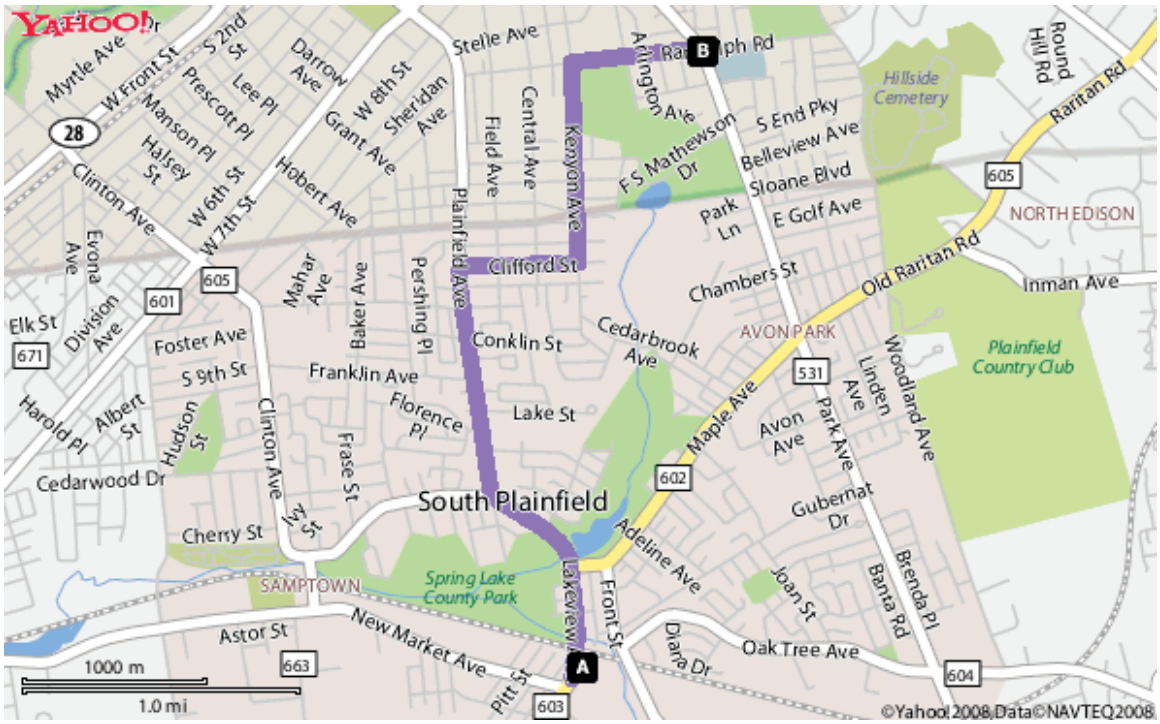
Directions:

1. Start at **333 HAMILTON BLVD, SOUTH PLAINFIELD** going toward **LAKEVIEW AVE** (**0.1** mi)
2. Make a Sharp **RIGHT** Turn on **LAKEVIEW AVE (CR-603)** (**0.2** mi)
3. Turn **RIGHT** on **CHURCH ST** (**0.1** mi)
4. Turn **RIGHT** on **HAMILTON BLVD** (**0.1** mi)
5. Turn **LEFT** on **S PLAINFIELD AVE** (**0.1** mi)
6. Turn **RIGHT** on **FRONT ST** (**0.1** mi)
7. Turn **LEFT** on **OAK TREE AVE** (**1.1** mi)
8. Turn **RIGHT** on **PARK AVE (CR-531)** (**1** mi)
9. Turn **LEFT** on **STEPHENVILLE PKY** (**0.5** mi)
10. Turn **RIGHT** on **PLAINFIELD RD (CR-661)** (**0.2** mi)
11. Turn **LEFT** on **SOUTHFIELD RD** (**0.3** mi)
12. Turn **RIGHT** on **CALVERT AVE W** (**0.3** mi)
13. Turn **RIGHT** on **CONCORD ST** (**< 0.1** mi)
14. Turn **LEFT** on **MONROE AVE** (**0.2** mi)
15. Turn **RIGHT** on **GROVE AVE** (**0.4** mi)
16. Turn **LEFT** on **JAMES ST** (**0.4** mi
17. Arrive at **65 JAMES ST, EDISON,** on the RIGHT (**< 0.1** mi)

Approximate Distance and Duration: 5.1 miles, 17 minutes

HOSPITAL DIRECTIONS

Directions to: Muhlenberg Medical Center 1200 Randolph Rd, Plainfield, NJ 07060 (908-668-2000)



Directions:

1. Start at **333 HAMILTON BLVD, SOUTH PLAINFIELD** going toward **LAKEVIEW AVE** (**0.1** mi)
2. Make a Sharp **RIGHT** Turn on **LAKEVIEW AVE(CR-603)** go **0.4** mi
3. Continue on **PLAINFIELD AVE (CR-603)** (**1.1** mi)
4. Turn **RIGHT** on **CLIFFORD ST** (**0.4** mi)
5. Turn **LEFT** on **KENYON AVE** (**0.7** mi)
6. Turn **RIGHT** on **RANDOLPH RD** (**0.4** mi)
7. Arrive at **1200 RANDOLPH RD, PLAINFIELD,** on the **RIGHT** (**< 0.1** mi)

Approximate Distance and Duration: 3.1 miles, 10 minutes

APPENDIX J

Inspection Details

Inspection Type:	Safety	Inspection Date:	
Project:		Inspected By:	
		Reviewed With:	

Category : Sub-Category

Administration	Compliant	Non-comp	Comments/Observations/Deficiencies:
Document pre-const mtgs			
CSP rpt - 1 business day			
CSP visit/audit			
Freq/reg safety inspections			
Graffiti & Photos			
HAZCOM training records [1910.1200(e)/12 NYCRR 820]			
ID Badges			
JHA submitted each trade			
Monthly report signed by CSP			
Monthly report to RE on time			
MSDS manual [1910.1200(e)(1)(i)/(g)(8)]			
Necessary corrective action(s)			
OSHA Posters / 300 Log [12 NYCRR 820 & 801(39)]			
Safety Rep-sp-onsite F/T			
SSHASP			
SSR on site Daily			
State / Fed posters (Eng/Sp)			
Toolbox Talks Documented			
Visitor PPE available [1910.132(a), (c), (d), (e)]			
Visitor sign-in form			
Weekly CSP Inspection			

Confined Space	Compliant	Non-comp	Comments/Observations/Deficiencies:
Atmospheric conditions [1910.146 App B]			
CD transmitted to CM prior to initial use			
Comm/secure area/signage [1910.146(c)(2)]			
Electrical/fire prevention [1910.146(c)(5)]			

Confined Space	Compliant	Non-comp	Comments/Observations/Deficiencies:
Entry super/monitor/entrant [1910.146(h), (i), (j)]			
Frequent inspections/air monitoring [1910.146 App B]			
Harness/extraction equipment [1910.146(d)(4)]			
Permit required [1910.146(c)(1), (6)/1926(b)(6)(i)]			
Regular insp / air monitor			
Rescue plan/emergency #s/map [1910.146(k)]			
Respiratory protection equipment			
Safety person/rescue equip/PPE			
Signage on space [1910.146(c)(2)]			
Training documentation [1926.21(b)(6)(i)]			
Ventilation [1910.146(c)(5)(ii)(E)]			
Written Confined Space Program			
Written Respiratory Program [1910.134(c)(1)]			

Cranes And Hoisting Equipment	Compliant	Non-comp	Comments/Observations/Deficiencies:
Annual inspection current [1910.179(l), 1926.550(a)(6)]			
Anti Two Block device			
Boom angle indicator			
Crane supported and level			
Daily inspections current [1926.550(a)(5)]			
Dist power lines/de-ener [1926.550(a)(15)(vii)]			
Fire extinguisher in crane [1926.550(a)(14)(i)]			
Flagman identified			
Lift plan on file			
Load chart posted [1926.550(a)(2)]			
Loads properly secured			
Means of communication			
Operator appears competent			
Operator manual in crane			
Operators License			
Outrig extend/cribbing			
Pre-lift noise notification			
Rig insp/rated/rated [1926.251(a)(1) / ASME B.30]			
Safety latches used			
Swing radius barricaded [1926.550(a)(9)]			
Tag lines used			
Weight of load verified			

Electrical	Compliant	Non-comp	Comments/Observations/Deficiencies:

Electrical	Compliant	Non-comp	Comments/Observations/Deficiencies:
Cords in good condition [1926.403(b)(1)]			
Cords protected from traffic/water [1926.416(b)]			
Elect Hot Work Procedures			
Electrical Room Protected [1926.403(i)(2)]			
Energized parts protected			
GFCIs used [1926.404]			
LO/TO procedures [1926.417]			
Proper use temp pwr bxs			
Signage present [1910.304(d)(2)(ii)]			
Temporary lighting maintained			
Third prong intact [1926.404]			

Environmental	Compliant	Non-comp	Comments/Observations/Deficiencies:
Asbestos/lead/mold/silica			
Concrete cut wet & vacuumed			
Containers labeled			
Dust control			
Haz material properly stored			
Noise monitoring			
Nuisance dust			
SPCC Plan [40 CFR 112.1(e)]			
Spill containment adequate [6 NYCRR 598.7]			
Spills cleaned in a timely manner			
Spills reported immediately			
Trucks washed prior to road			

Excavations	Compliant	Non-comp	Comments/Observations/Deficiencies:
Access with 25' [1926.65(c)(2)]			
Competent person present [1926.651(k)(1)]			
Daily inspections doc [1926.651(k) / .652(a)]			
Excav > 20' engineered			
Ladder extended 36"			
One Call system used [1926.651(b)(1)]			
Perimeter prot/barricade			
Protection OK for soil type [1926 Subpart P, App A]			
Sloped, benched, or shored [1926.652(a)(1)]			
Spoil 2' from edge [1926.651(a)]			
Stair tower insp. daily/documented			

Excavations	Compliant	Non-comp	Comments/Observations/Deficiencies:
Surface encumbrances [1926.651(a)]			
Surface traffic exposure [1926.651(d)]			
Trench box extended 18"			
Water entering excavation			

Fall Protection	Compliant	Non-comp	Comments/Observations/Deficiencies:
Anchorage 5,000 lbs [1926.502(b)(15)]			
Ext/int guardrails [1926.502(b)]			
Fall protection at 6' [1926.501(b)]			
Fall protection plan [1926.502(k)]			
Fall Protection training [1926.503]			
Falling object protection [1926.501(b)]			
Floor/wall opening protected [1926.501(b)(4)]			
Flr covrs adeq,secure,label [1926.502(i)]			
No more than 2 on horiz lifeline [1926.502(d)(8)]			
Proper use of "CAS" id			
Rebar caps			
Roof edge protected [1926.501(b)]			
Safety harness and lanyard [1926.502(b)]			
Stair/ramp/walkway prot [1926.501(b)(6)]			

Fire Protection	Compliant	Non-comp	Comments/Observations/Deficiencies:
Emergency vehicle access			
Ext charged and inspected [1926.150(a)(4)]			
Fire suppression equip avail [1926.150(a)(2)]			
Fire watch when applicable			
FW Cert of Fit			
Gas cylinder storage [1926.152]			
Gas cylinders upright & capped			
No LP gas stored indoors			
No smoking signage [1926.151(a)(3)]			
Prop signs in store areas			
Proper fuel containers used [1926.152]			
Welders Cert of Fit			

Hand And Power Tools	Compliant	Non-comp	Comments/Observations/Deficiencies:
Cord in good condition [1926.300(a)]			
Ground prong in place/Double insulated			

Hand And Power Tools	Compliant	Non-comp	Comments/Observations/Deficiencies:
Guards in place [1926.300(b)]			
Information label on tool			
Proper tool for the job			
Strain relief functioning			
Tool in good condition [1926.300(a)]			
Whip checks			

Hazard Communications	Compliant	Non-comp	Comments/Observations/Deficiencies:
PPE based on MSDS			
Readily available			
Copy of program [1910.1200(e)(1)]			
Employees trained [1910.1200(b)(4)(iii)]			
Inventory list			
MSDS' (site specific) [1910.1200(g)]			
Proper labels on containers [1910.1200(b)(4), (f)(1)]			

Housekeeping	Compliant	Non-comp	Comments/Observations/Deficiencies:
Adequate receptacles [1926.25(c)]			
Clear access to bldg/site			
Designated employee parking			
Impalement protection			
Proper material storage [1926.250(b)]			
Proper use of "CAZ" id			
Roadway around proj clear			
Rodent control			
Slip, trip, fall hazards [1926.250(b)]			
Trash in protected cont [1926.25(c)]			
Universal Waste Signage			
Universal Waste Stored Separately			
Walkways clear [1926.25(a)]			

Ladders / Stairs	Compliant	Non-comp	Comments/Observations/Deficiencies:
3' above landing [1926.1053(b)(1)]			
Access break >19" [1926.1053(a)(1)]			
Clear of debris/materials [1926.1053(b)(9)]			
Extension ladder 4:1 pitch [1926.1053(b)(5)(i)]			
Extension ladders intact			
Inspected for defects [1926.1053(b)(15)]			
Job-blt ldrs const properly [1926.1053(a)]			

Ladders / Stairs	Compliant	Non-comp	Comments/Observations/Deficiencies:
Ladders properly secured [1926.1053(b)(8)]			
Landings and treads filled [1926.1052(b)(1), (2)]			
Proper use of ladder [1926.1053(b)]			
Rails at stairs/landings [1926.1052(c)]			
Safe Ladder Storage			
Safe work dist from hazd			
Slip trip exposure elim [1926.1053(b)(2)]			
Stairs illuminated			
Step ladders extended			
Users trained			

Medical / Emergency	Compliant	Non-comp	Comments/Observations/Deficiencies:
1st aid kit [1926.50(d)]			
1st Aid/CPR on site [1926.23]			
Alarm system audible/tactile			
EAP Emergency action plan [1926.35]			
EAP Emergency numbers posted			
EAP includes assembly location			
Emergency supplies readily available			
Eye wash [1926.50(g)]			
Map to medical facility			
Team contact numbers [1926.35(b)]			

Motorized Equipment	Compliant	Non-comp	Comments/Observations/Deficiencies:
Back up alarm functioning [1926.601(b)(4)(i)]			
Fire extinguisher available			
Flagman used if applicable [1926.600(a)(5)]			
Glass free of obstructions			
Horn functioning			
Inspection documents available			
Operator appears competent			
Seat belts used [1926.602(a)(2)(ii)]			
Training docs available			

P.P.E.	Compliant	Non-comp	Comments/Observations/Deficiencies:
Glasses / face shields [1926.102]			
Gloves [1926.95]			
Hard Hats [1926.100]			
Hearing Conservation Program			

P.P.E.	Compliant	Non-comp	Comments/Observations/Deficiencies:
Hearing protection [1926.101]			
High-vis Vest [1926.95]			
Leather Boots [1926.96]			
Mud boots [1926.96]			
Proper Clothing [1926.95]			
Respirators [1926.103]			

Scaffolds	Compliant	Non-comp	Comments/Observations/Deficiencies:
Bracing and pins in place			
Compatible components used [1926.451(b)(10)]			
Competent person present [1926.651(f)(7)]			
Fully decked [1926.541(b)(1)]			
Guardrail system [1926.451(g)(4)]			
Guardrails in place @ 10' [1926.451(g)(4)]			
Inspected daily/documented [1926.451(f)(3)]			
Planks - No cracks/checks			
Planks secured [1926.451(b)(4)]			
Prop secured to structure [1926.451(c)(1)]			
Proper access to platforms [1926.451(e)]			
Proper loading of materials [1926.451(f)(1)]			
Safe work distances			
Sills,plates,jacks installed [1926.451(c)(2)(i)]			
Surface in safe condition			

Scissor / Arial Lifts	Compliant	Non-comp	Comments/Observations/Deficiencies:
Equipment loaded properly [1926.453(a)(2) & (b)(2)(vi)]			
Gate or chain secured			
Harness while in boom lifts [1926.453(b)(2)(v)]			
No more than 2 in basket			
Not using as a hoist			
Nothing to increase height [1926.453(b)(2)(iv)]			
Operating on flat surface			
Operator training [1926.454(a)]			
Safe work distances			
Tied off to approved point			

Site / Public Protection	Compliant	Non-comp	Comments/Observations/Deficiencies:
Adequate lighting [1926.56]			

Site / Public Protection	Compliant	Non-comp	Comments/Observations/Deficiencies:
Barricades installed properly			
Cont. Safety rep present			
Excavations protected			
Falling object protection			
Fenceline monitoring			
Perimeter fences			
Public protection signage			
Security system in place			
Street closure identified			
Traffic Control plan			

Hot Work	Compliant	Non-comp	Comments/Observations/Deficiencies:
Bottles stored separately [1926.350(a)(10)]			
Bottles upright/cap/secured [1926.350(a)(1) & (a)(9)]			
Combustibles > 35' away			
Fire ext present			
Flash arrest on torches			
Flash protection available			
FW Cert of Fit			
Gauges working properly			
Hot Work permit in place			
Leads in good condition			
PAI signed permit			
PAI trained			
Prop PPE in use			
Torch hoses good cond [1926.350(f)(3)]			
Weld machine ventilated [1926.350(a)]			
Welders Cert of Fit			

PSM	Compliant	Non-comp	Comments/Observations/Deficiencies:
PSM Written Plan [1926.64(c)(1)]			
PSM operating procedures [1926.64(f)]			
Initial training [1926.64(g)(1)]			
Refresher training every 3 yrs [1926.64(g)(2)]			
Contractor safety eval [1926.64(h)(2)(i)]			
Contractor safe work practices [1926.64(h)(2)(iv)]			
Contractor evaluation [1926.64(h)(2)(v)]			
PSM EAP for plant [1926.64(n)]			

Concrete Safety	Compliant	Non-comp	Comments/Observations/Deficiencies:
Riding bucket			
Skin Protection [1926.95]			
Rebar caps			
Working under loads			

Haz Material Storage	Compliant	Non-comp	Comments/Observations/Deficiencies:
Weekly insp present			
Emerg #'s posted			
All drums sealed			
2nd containment			
No leaks			
Drum inventory present			
Inventory accurate			
Proper signage			
Haz & Non-haz sep			
AG ST placards [1910.120(c)]			
Tank registration display			
SPCC plan if >1320 gal			
Corrosion protection if req			
Fill line labeled			

Used Oil	Compliant	Non-comp	Comments/Observations/Deficiencies:
Petroleum impacted soil 60 day max storage			
"Used Oil" marked on drum			

Universal Waste	Compliant	Non-comp	Comments/Observations/Deficiencies:
Battery cells intact/closed			
Container properly labeled			
DOT shipping paper affixed			
Lamp storage segregated			
Mercury thermostat storage			
Over pack containers if req.			
Quantity exceed 11,000 lb			
Store greater than 1 year			
Transport vehicles labeled			

Underground Construction	Compliant	Non-comp	Comments/Observations/Deficiencies:
Air monitoring comp. person [1926.800(j)(1)(i)(A)]			
Air testing records [1926.800(j)(3)]			

Underground Construction	Compliant	Non-comp	Comments/Observations/Deficiencies:
Audible alarm on train [1926.800(r)(3)(i)]			
Blasting smoke out [1926.800(k)(5)]			
Check in/out [1926.800(c)]			
Comp person inspection [1926.800(o)(3)(i)(A)]			
Controlled access [1926.800(b)(3)]			
Drilling dust control [1926.800(k)(9)]			
Drilling/mucking illumination [1926.800(l)(1)]			
Emerg. Portable Lighting [1926.800(g)(4)]			
FD know about work [1926.800(g)(5)(ii)]			
Fire exting. in hoist house [1926.800(t)(3)(x)]			
Flammables > 100' from shaft [1926.800(m)(7)]			
Four-gas monitoring [1926.800(j)(1)(ii)(A)]			
Gasoline prohibited [1926.800(m)(5)(i)]			
Gassy operations [1926.800(h)(2)]			
Illumination 5fc [1926.800(l)(1)]			
Mechanical ventilation [1926.800(k)(1)(ii)]			
Personnel cage door opens properly [1926.800(t)(4)]			
Rescue team [1926.800(g)(5)(i)]			
Reversible air flow [1926.800(k)(4)]			
Safe access/egress [1926.800(b)(1)]			
Self rescuers [1926.800(g)(2)]			
Top designated person [1926.800(g)(3)]			
Two means of comm. [1926.800(f)(2)]			

Drilling	Compliant	Non-comp	Comments/Observations/Deficiencies:
Access Agreements			
Activity hazard analyis			
All guards in place			
Atmospheric monitoring			
B/U Alarms/forklifts & bobcats			
Bore hole secure			
Checks per D.O.T./ project			
Containters labeled/stored			
Decon procedures			
Drilling/well permit			
Emp aware of med fac locat.			
Emp know accident report pro			
Empl. trained in oper proc			

Drilling	Compliant	Non-comp	Comments/Observations/Deficiencies:
Equipment clean			
Exclusion zone for drill rig			
Fed motor carrier reg book			
Fire Ext on rig			
Fluid leaks contained			
Fuel properly labeled			
Fuel stored in non-flam loc			
High voltage lines			
Highwalls, banks, trenches			
Hot work permits used as nec			
Hydraulic hose condition			
IDW Containment			
IDW handling/drum lifting			
Knowledge of shut down switch			
Leaks on rig			
Lightning strike potential			
Material handling			
MSDS sheet available			
One Call utilized			
Pipe slings - good cond.			
Poisonous plants			
Pressure relief valves			
Rig set up/rig stability			
Safety latches on cable hooks			
Shut down devices			
Smoking policy observed			
Struck by hazards			
Trip hazards			
Underground utilities located			
Warning labels in place			
Wedge sockets/hoisting plugs			
Welds, bolts, pins condition			
Whip-checks in place/cond.			
Wire rope condition			
Work area organized			
Zero energy state achieved			

Quality of Life	Compliant	Non-comp	Comments/Observations/Deficiencies:
Air powered equip. w/ pneumatic exhaust silencers			
Noise levels in accordance w/ contract			
Noise mitigation plan posted			

Quality of Life	Compliant	Non-comp	Comments/Observations/Deficiencies:
Noise mitigation notice posted at front gate			
Mufflers on construction equipment			
Dust suppression on site roads/parking areas			
Water truck on site/in use per Engineer			
Speed limit signs posted on site			
Dust monitors working properly			
Visible sign of rodent activity on site			
Visible sign of rodent activity off site			
Rodent monitoring and control program			
Is trash being removed from non work areas?			
Grass areas being maintained			
Areas being cleared of snow/ice			
Employee parking			
Trucks idling less than three (3) minutes			
Using ULSD			
Using BAT			
"BAT" equipment working properly			
Trucks using "ULSD" fuel?			
Are Trucks equipped with "BAT"?			
Truck beds covered with tarps			
DOB Permit for Crane provided			
Pre-inspection checklist filed/adhered to			
Erosion control devices			
Oil/ Water Separator/Sedimentation tanks			
Oil Booms in place/properly working			
Flow meters operational/data being recorded			

Steel Erection	Compliant	Non-comp	Comments/Observations/Deficiencies:
Anchorage points meet req			
CDZ training / utilized			
EE above 30' protected			
EE btwn 15-30' fall prot pres			
Erector notif of modification			
Fall pro training provided			
Falling object protection			
Mult lift proced utilized			
Mult lift/rig/con training			
Proper anch of colmns/beam			
Site layout / sequence plan			

Steel Erection	Compliant	Non-comp	Comments/Observations/Deficiencies:
Struct flooring requirements			
Written approv conc strength			

ATTACHMENT A

Health and Safety Information for OU-1

Accident Prevention Program Administration Plan
Section 3.0: Project Organization and Responsibility for OU-1
Section 4.0: Potential Health and Safety Hazards and Controls for OU-1
Section 5.0: Personal Protective Equipment for OU-1
Section 8.0: Hazardous Material Monitoring for OU-1

CORNELL-DUBILIER ELECTRONICS SUPERFUND SITE
FINAL SITE-WIDE SITE SAFETY AND HEALTH PLAN
FOR ALL OPERABLE UNITS (OU-1 THROUGH OU-4)
ATTACHMENT A
HEALTH AND SAFETY INFORMATION FOR OU-1

TABLE OF CONTENTS

TABLES

ACCIDENT PREVENTION PROGRAM
ADMINISTRATIVE PLAN
OPERABLE UNIT ONE (OU-1)
(EM385-1-1 (Nov 03) Pages 3,4 & App A)

1. Contractor	**2. Contract Name & No.**		**3. Date**
Malcolm Pirnie, Inc.	Cornell-Dubilier Electronics Superfund Site, W912DQ-06-D-0006		March 2008 (date of stand-alone SSHP for OU-1)
4. Project Manager	**5. Shift/day**	**5a. Hours/shift**	**5b. Maximum employees/shift**
Ed Dudek, PE	One	Ten hours per shift	N/A

5c. Describe major scope of work and location:
The OU-1 activities will include pre-remedial action field investigations. These investigations include, but are not limited to, surface and sub-surface soil sampling and indoor dust sampling at residential properties located adjacent to the CDE facility.

6a. Training - List subjects to be discussed with employees in safety indoctrination.

- Characteristics and potential hazards of contaminants known to be present at the site.
- Personal protective clothing: function, donning/doffing.
- Personal hygiene.
- Location of available restrooms.
- Decontamination procedures.
- General safety concepts.
- Signs and symptoms of over-exposure to site-specific chemical hazards.
- Meeting areas in case of emergency.
- Approved routes to and egress from the work areas
- -Temperature stress.
- -Emergency action plan.
- -Site contingency plans.
- -Emergency recognition and prevention.
- -Hazard communication.
- -Location of the HASP in Work Area with Directions to the Hospital Clearly Marked.

6b. Training - List mandatory training and certifications that are applicable to this project (e.g., explosive actuated tools, confined space entry, crane operator, diver, vehicle operator, boat captains etc.)

- 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) and 8-hour HAZWOPER Refresher
- 8-hour Hazardous Waste Operations and Emergency Response Supervisor training
- 10-hour OSHA Construction Safety training, Supervisor training, and CRP/FA/BBP training (PSO only)

6c. List major equipment (i.e. cranes, dozers, vessels etc.)
No major equipment was required to complete the tasks described in Section 5c.

6d. List special equipment [i.e. radioactive equipment (Moisture Density Gage) etc.]
Special equipment to be utilized during the OU-1 scope of work includes but is not limited to a photo-ionization detector (PID) and a global positioning system (GPS).

7. Responsibility & Authority - Who is responsible for safety?

Project Safety Officer:	**Corporate Health and Safety Manager:**	**Field Team Leader:**	**Line of Authority?**
Doug Auld	Charles Myers, CHMM, CIH, CIPS, CPEA	Doug Auld	Doug Auld

8. Who will conduct safety inspection?	**8a. How?**	**8b. When?**
Doug Auld/Charles Myers	Safety inspections will be conducted by the PSO and the CHSM	PSO – Monthly CHSM – Random (approx. twice per year or project duration)
9a. Is safety & health policy attached?	**9b. Is safety program attached?**	**9c. Day & hour weekly safety meeting to be held:**
Yes. Detailed in the Site-Wide Site Safety and Health Plan for All Operable Units (OU-1 through OU-4)	Yes. Appendix A of the Site-Wide Site Safety and Health Plan for All Operable Units (OU-1 through OU-4)	Once per day prior to work start

10. How will subcontractor & supplies be controlled?	**11. What are their safety responsibilities?**
There are no subcontractors under contract for performance of OU-1 field activities.	N/A

ACCIDENT PREVENTION PROGRAM
ADMINISTRATIVE PLAN
OPERABLE UNIT ONE (OU-1)
(EM385-1-1 (Nov 03) Pages 3,4 & App A)

12. Who will report accidents, exposure data?
Field Team Leader, PSO, and/or CHSM

13. Medical Support – Outline on-site medical support and off-site medical arrangements:
On-site medical support: The PSO is the primary authority for directing operations at the Site under emergency conditions. The PSO will have 8-hour Hazardous Waste Operations and Emergency Response Supervisor training, 10-hour OSHA Construction Safety training, Supervisor training, and CRP/FA/BBP training. Emergency equipment such as fire extinguishers, first aid kit, and eye wash will be kept on-site.

Off-site medical arrangements: The two hospitals located in the vicinity of the Cornell-Dubilier site are the JFK Medical Center in Edison, NJ and the Muhlenberg Medical Center in Plainfield, NJ. Site maps are included in this site-wide SSHP.

14. Outline procedures for conducting hazard assessments & written certification of PPE	**Who?**	**When?**	**How?**
Review proposed work tasks.	PSO	Prior to conducting site work.	Review of proposed work scope
Assess potential hazards associated with work area.	Field Team Leader/PSO	Prior to conducting site work.	Review of Attachment A (OU-1) of the Site-Wide Safety and Health Plan
Identify potential routes of entry and points of contact with hazards.	Field Team Leader/PSO	Prior to conducting site work.	Review of Attachment A (OU-1) of the Site-Wide Safety and Health Plan
Review airborne contaminant action levels (specified in the Safety Plan) relative to known hazards.	PSO	Prior to conducting site work.	Review of Attachment A (OU-1) of the Site-Wide Safety and Health Plan. Note that air monitoring will not be performed.
Identify the appropriate PPE ensemble for project work activities.	PSO	Prior to conducting site work.	Review of Attachment A (OU-1) of the Site-Wide Safety and Health Plan
Regularly assess site hazards to determine if/when PPE ensemble modifications are appropriate.	Field Team Leader/PSO	Daily	Through awareness and continuous review of site activities throughout project duration

15. Names of first aid attendants having certificates	**Type of certificate & expiration date**	**Names of USCG licensed boat operators. Type licence & expiration date.**
Christopher Goldsmith	Adult First Aid and CPR	N/A
Charles Myers	Adult First Aid and CPR	

ACCIDENT PREVENTION PROGRAM
ADMINISTRATIVE PLAN
OPERABLE UNIT ONE (OU-1)
(EM385-1-1 (Nov 03) Pages 3, 4 & App A)

Proposed layout of temporary buildings and facilities (including subcontractors) and traffic patterns including access roads, haul roads, R.R.s. utilities, etc.

There are no temporary building and facilities for subcontractors in the OU-1 project study area. The OU-1 study area consists of residential properties located adjacent to the formerCDE facility. No heavy equipment, excavation, or hauling is to be conducted within OU-1.

The **Malcolm Pirnie, Inc.** (Company) will pursue a positive program of training, inspections and hazard control throughout the term of this contract. Mr. **Charles Myers, CHMM, CIH, CIPS, CPEA** has responsibility and authority for enforcing them.

Contractor's Signature	March 2008 Date	C.O.R. Signature and Date

3.0 PROJECT ORGANIZATION AND RESPONSIBILITY FOR OU-1

Malcolm Pirnie personnel who have health and safety responsibility for OU-1 are summarized in Table A3-1, below.

Table A3-1: Malcolm Pirnie OU-1 Personnel

Project Role	Name	Contact Information
Project Manager	Edward Dudek, PE	W: (914) 641-2686
Deputy Project Manager	Erika Zamek	W: (914) 641-2961
Project Certified Industrial Hygienist	Charles Meyers, CHMM, CIH, CIPS, CPEA	W: (914) 641-2610 Cell: (914) 484-7151
Project Safety Officer	Doug Auld	W: (201) 398-4351
Alternate Project Safety Officer	Chris Goldsmith	W: (201) 398-4302
Field Team Leader	Doug Auld	W: (201) 398-4351
Alternate Field Team Leader	Chris Goldsmith	W: (201) 398-4302
Alternate Field Team Leader	TBD	W: (201) 398-XXXX

4.0 POTENTIAL HEALTH AND SAFETY HAZARDS AND CONTROLS FOR OU-1

4.1 ENVIRONMENTAL SAMPLING ACTIVITIES

The field investigation activities proposed at the OU-1 vicinity properties are described in the Final FSP (OU-1). Components of the pre-remedial action field investigation may include, but are not limited to, the following elements:

- Surface and sub-surface soil sampling; and
- Indoor dust sampling

Detailed descriptions of the fieldwork and sampling activities and the Standard Operating Procedures (SOPs) that are applicable to each field activity are provided in the Final FSP (OU-1) and the QAPP (OU-1). General physical and biological hazards and monitoring/control methods are also addressed in this section.

Table A4-1: Task Hazard Analysis

Task	Inhalation Hazard	Ingestion/Dermal Contact Hazard	Slips and Falls	Lifting Hazard	Electric (Vacuum) tools	Chemical Spills	Foot/ vehicular traffic	Heat Stress	Cold Stress	Noise
Surface and sub-surface soil sampling	X	X	X	X		X	X	X	X	
Indoor dust sampling	X	X	X	X	X	X				X

Table A4-1: Task Hazard Analysis (continued)

PRINCIPAL TASK/STEP	SAFETY/HEALTH HAZARDS	RECOMMENDED CONTROLS
Surface and sub-surface soil sampling	Inhalation Hazards (fine soils) Minimal Potential Exposures	Use of PPE is required in accordance with SOPs 2 and 4. Dust masks are optional. Decontamination of equipment and waste disposal are discussed in SOP 4. Adherence to safety standard operating procedures is discussed in Section 12.0 of the Site-wide SSHP.
	Ingestion/Dermal Contact	Use of PPE, including gloves, is required. Wash hands and face prior to eating or drinking.
	Slips and Falls	Leather safety boots with steel-toes and non-skid soles to protect against sharp or heavy objects and slippery ground and floors. Practice good work area housekeeping (e.g., keep walkways clear of equipment).
	Lifting Hazards	Use proper lifting techniques (e.g., bend legs, not back). Use an individual limit of 40 pounds. Use more than one person to lift objects that are bulky/awkward. Stretch back and arms before using the hand auger. Lifting safety is described in Section 4.3.6 of this document.
	Heat Stress	Wear light clothing that covers arms and legs. Monitor hydration. Exposure monitoring and weather-related clothing for heat stress is described in Section 7.0 of the Site-wide SSHP.
	Cold Stress	Wear cold weather clothing such as Carhartts. Monitor hydration and cold effects on outer limbs. Exposure monitoring and weather-related clothing for cold stress is described in Section 7.0 of the Site-wide SSHP.
	Chemical Spills	Carry and store containers of acetone and methanol in plastic trays in a manner that the containers do not bang into each other. Conduct all decontamination activities out of doors. Let minor spills evaporate allowing no sources of ignition near the spill.
	Foot and vehicular traffic	Use cones and barrier tape to demarcate hazard area. Use traffic cones in the direction of on-coming traffic to warm motorists of the presence of a parked vehicle.

Table A4-1: Task Hazard Analysis (continued)

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
1. Global positioning system (GPS) 2. Stainless steel bucket augers 3. T-handle and drill rods 4. Food-grade disposable pans (deep) 5. Stainless steel trowels, spoons, and spatulas 6. Disposable gloves 7. Plastic zip-lock bags 8. Plastic garbage bags 9. Measuring tapes 10. Polyethylene sheeting 11. Aluminum foil 12. 8-oz glass sample jars 13. Topsoil or potting soil 14. Paper towels 15. Sample coolers 16. Ice 17. Traffic cones 18. Barrier tape	Calibration of GPS according to manufacturer's recommendations.	40-hour HAZWOPER 8-hour HAZWOPER Refresher SOPs 1, 2 and 4

Table A4-1: Task Hazard Analysis (continued)

PRINCIPAL TASK/STEP	SAFETY/HEALTH HAZARDS	RECOMMENDED CONTROLS
Indoor Dust Sampling	Inhalation Hazards (dust) Minimal	Dust mask may be required during handling of the vacuum cleaner bags.
	Ingestion/Dermal Contact	Use of PPE is required and discussed in SOP 3. Wash hands and face prior to eating or drinking. Protect hands and eyes from contact with methanol. Adherence to safety standard operating procedures is discussed in Section 12.0 of the Site-wide SSHP.
	Slips and Falls	Leather safety boots with steel-toes and non-skid soles to protect against sharp or heavy objects and slippery ground and floors. Practice good work area housekeeping (e.g., keep walkways clear of equipment).
	Lifting Hazards	Use proper lifting techniques (e.g., bend legs, not back). Use an individual limit of 40 pounds. Use more than one person to lift objects that are bulky/awkward. Stretch back and arms prior to carrying equipment. Lifting safety is described in Section 4.3.6 of this document.
	Electric (Vacuum) Tools	If a Ground Fault Circuit Interruptor (GFCI) protected outlet is not available, utilize a portable GFCI when working in wet areas. Unplug tools when changing hose and nozzle.
	Noise	Use of appropriate PPE, including ear plugs or muffs, may be required and discussed below.
	Chemical Spills	Carry and store containers of acetone and methanol in plastic trays in a manner that the containers do not bang into each other. Conduct all decon activities out of doors. Let minor spills evaporate allowing no sources of ignition near the spill.

Table A4-1: Task Hazard Analysis (continued)

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
1. Nilfisk Model GS-80 vacuum cleaner (or equivalent) 2. Two meter folding ruler or similar device 3. Masking tape 4. Clean aluminum foil 5. Shaker sieve, as specified in ASTM D422, with 100-mesh screen 6. Analytical balance [sensitive to a minimum 0.1 milligram (mg) and weighing range of 0.1mg - 1000 grams(g)]. 7. Distilled water 8. Methanol 9. Kimwipes TM or other laboratory tissue 10. Vacuum collection bags 11. Bottle brush 12. Scrub brush 13. Polyliners 14. 32-ounce glass jars or plastic bags 15. Cooler 16. Ice	Pre-use inspection of vacuum cleaner according to manufacturer's recommendations.	40-hour HAZWOPER 8-hour HAZWOPER Refresher SOPs 1, 3 and 4

4.2 CHEMICAL HAZARDS

Table A4-2 lists OSHA Permissible Exposure Limits (PELs), American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs), and NIOSH Immediately Dangerous to Life or Health (IDLH) concentrations for chemicals that are suspected to be present on the site and for those that will be used during sample collection and equipment decontamination. The primary hazard presented by the acetone and the methanol is flammability.

Table A4-2: PELs, TLVs and IDLHs

CONSTITUENT	PELs	TLVs	IDLH
Acetone	1,000 ppm	500 ppm	2,500 ppm
Methanol	200 ppm	200 ppm	6,000 ppm
PCBs 42%	1 mg/m³	1 mg/m³	5 mg/m³
PCBs 54%	0.5 mg/m³	0.5 mg/m³	5 mg/m³
Total Dust	10 mg/m³	15 mg/m³	NA

PEL and TLV values are 8-hour time-weighted averages (TWAs)
Sources: PEL: 1910.1000 Table Z-1 :Limits for Air Contaminants, www.osha.gov;
IDLH, TLV: http://www.cdc.gov/niosh/idlh/intridl4.html

Hazardous materials monitoring (if applicable) is discussed in Section 8.0 of this attachment.

4.3 PHYSICAL HAZARDS

All field activities that will occur at the OU-1 properties are outlined in the FSP (OU-1). The following subsections discuss physical hazards that may be encountered during field activities, and control measures with which to minimize the potential for an incident.

4.3.1 Heat Stress

Exposure monitoring and actions required for heat stress are described in Section 7.0 of the Site-wide SSHP.

4.3.2 Cold Stress

Exposure monitoring and required actions for cold stress are described in Section 7.0 of the Site-wide SSHP.

4.3.3 Noise Hazards

Malcolm Pirnie requires the use of hearing protection by all employees when noise levels exceed 85 decibels. Hearing protection will be used which yields a Noise Reduction Rating (NRR) that reduces the noise level to below 80 dBA when placed in the ear canal.

4.3.4 Slip, Trip, and Fall Hazards

4.3.4.1 Hazards

Irregularities in the surface conditions at OU-1 properties may pose a slip, trip, or fall, hazards to workers. Trip hazards at residential properties include uneven ground in property yards, in-ground sprinkler systems, children's toys, and obstructions in walkways. There are potential hazards from the presence of wet areas, puddles, icy areas, or snowy areas that may be within walkways or open spaces.

Within OU-1 property buildings, waxed floors, unanchored rugs, and walkway obstructions pose potential slip, trip, and fall hazards to workers.

4.3.4.2 Control Measures

Slip, trip, and fall hazards must be controlled by exercising care and caution when working at the OU-1 properties. Good housekeeping practices must be maintained for work areas. Field personnel will be briefed by the PSO each morning on the location and type of obvious hazards in the work areas.

Personnel are to take care in areas where ground irregularities or low-lying obstacles exist and may not be observed due to vegetation. Such objects will be moved or flagged (if not movable) when observed. Workers are to take care within OU-1 properties buildings where irregular or slippery surfaces and/or narrow walkways may pose potential slip, trip, and fall hazards. Field personnel will wear 6", over the ankle, steel-toed, chemically resistant leather work boots with a defined heel and traction soles to

protect against sharp or heavy objects and to protect against uneven or slippery walkways.

4.3.5 Sanitation

Field activities will be conducted in accordance with the OSHA sanitation standard (29 CFR 1910.141). Office trailers maintained by Sevenson Environmental Services, Inc. located nearby at the CDE facility are equipped with sanitary toilet facilities and are accessible to the OU-1 sampling team. Field team members will be provided with an antibacterial gel (e.g. Purel) if potable water is not available at the toilet facilities.

4.3.6 Lifting Safety

4.3.6.1 Hazards

Lifting and moving of heavy or awkwardly-balanced objects may result in injury. Lifting and moving of sampling equipment may involve heavy or awkward items.

4.3.6.2 Control Measures

Using proper lifting techniques may prevent back strain or injury. The fundamentals of proper lifting include:

- Consider the size, shape, and weight of the object to be lifted. A mechanical lifting device (such as a winch) or additional persons must be used to lift an object if it cannot be lifted safely alone.
- The hands and the object should be free of dirt or grease that could prevent a firm grip.
- Gloves must be used, and the object inspected for metal slivers, jagged edges, burrs, or rough or slippery surfaces.
- Fingers must be kept away from points that could crush or pinch them, especially when putting an object down.
- Feet must be placed far enough apart for balance. The footing should be solid and the intended pathway should be clear.

- The load should be kept as low as possible, close to the body with the knees bent.
- To lift the load, grip firmly and lift with the legs, keeping the back as straight as possible.
- A worker should not carry a load that he or she cannot see around or over.
- When putting an object down, the stance and position are identical to that for lifting; the legs are bent at the knees, and the back is straight as the object is lowered.
- Malcolm Pirnie personnel should not lift drums that are not completely empty.
- The use of a hand auger can be strenuous for personnel not used to working with this tool. Stretching to loosen and warm up back and arm muscles should be completed by staff prior to using the auger.

4.3.7 Ladder Safety

4.3.7.1 Hazards

It is not anticipated that ladder use will be required for sampling activities at the OU-1 properties.

4.3.8 Overhead Hazards

It is not anticipated that overhead hazards will be encountered during sampling activities at the OU-1 properties.

4.4 Biological Hazards

Homeowner pets may be encountered during sampling activities. It is not anticipated that these animals will pose a hazard, but all should be kept at a distance to ensure that an unanticipated reaction does not result in injury. Field personnel may request that homeowners securely tie up or otherwise sequester all animals prior to entering the property.

Rats, feral dogs, and raccoons may pass through or inhabit parts of the nearby CDE facility. Rats and raccoons that are outside during daylight are to be avoided, as they may be rabid. Feral dogs may travel in packs. Never turn your back and run. Face the animal, make as much noise as possible, and move slowly to shelter or your vehicle without breaking eye contact.

5.0 PERSONAL PROTECTIVE EQUIPMENT FOR OU-1

Based upon current information regarding the contaminants present at the Cornell-Dubilier Site and the Task hazard analysis of the tasks to be completed (see Table A4-1), the required level of personal protection is provided below.

Table A5-1: Required Level of Protection

Study	Anticipated Level of PPE
Surface and sub-surface soil sampling	Level D (Modified Level D if warranted by conditions)
Indoor dust sampling	Level D (Modified Level D if warranted by conditions)

8.0 HAZARDOUS MATERIAL MONITORING FOR OU-1

As a result of the hazard assessment on the tasks described in Section 4.0, exposure monitoring will not be required for these tasks.

ATTACHMENT B

Health and Safety Information for OU-2

Accident Prevention Program Administration Plan
Section 3.0: Project Organization and Responsibility for OU-2
Section 4.0: Potential Health and Safety Hazards and Controls for OU-2
Section 5.0: Personal Protective Equipment for OU-2
Section 8.0: Hazardous Material Monitoring for OU-2

CORNELL-DUBILIER ELECTRONICS SUPERFUND SITE

FINAL SITE-WIDE SITE SAFETY AND HEALTH PLAN

FOR ALL OPERABLE UNITS (OU-1 THROUGH OU-4)

ATTACHMENT B

HEALTH AND SAFETY INFORMATION FOR OU-2

TABLE OF CONTENTS

FIGURES

TABLES

ACCIDENT PREVENTION PROGRAM
ADMINISTRATIVE PLAN
OPERABLE UNIT TWO (OU-2)
(EM385-1-1 (Nov 03) Pages 3,4 & App A)

1. Contractor	**2. Contract Name & No.**		**3. Date**
Malcolm Pirnie, Inc.	Cornell-Dubilier Electronics Superfund Site, W912DQ-06-D-0006		-January 2006 (date of the stand-alone SSHP for Buildings Program) -July 2006 (date of the stand-alone SSHP for Soil Program)
4. Project Manager	**5. Shift/day**	**5a. Hours/shift**	**5b. Maximum employees/shift**
Ed Dudek, PE	One	Ten hours per shift	N/A

5c. Describe major scope of work and location:
The OU-2 activities will include building material investigations (sampling), soil investigations (sampling), and recordation of historic buildings in compliance with HABS/HAER/NJSHPO requirements. Tasks associated with this scope will likely include asbestos investigation and sampling, mercury and PCB-containing materials inventory, PCB-containing materials investigation and sampling, metals and PCB core sampling, quantity takeoff survey of Site building materials, soil investigation and sampling, habitat assessment, and recordation of historic site buildings.

6a. Training - List subjects to be discussed with employees in safety indoctrination.

- Characteristics and potential hazards of contaminants known to be present at the site.
- Personal protective clothing: function, donning/doffing.
- Personal hygiene.
- Location of available restrooms.
- Decontamination procedures.
- General safety concepts.
- Signs and symptoms of over-exposure to site-specific chemical hazards.
- Meeting areas in case of emergency.
- Approved routes to and egress from the work areas
- -Temperature stress.
- -Emergency action plan.
- -Site contingency plans.
- -Emergency recognition and prevention.
- -Hazard communication.
- -Location of the HASP in Work Area with Directions to the Hospital Clearly Marked.

6b. Training - List mandatory training and certifications that are applicable to this project (e.g., explosive actuated tools, confined space entry, crane operator, diver, vehicle operator, boat captains etc.

- 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) and 8-hour HAZWOPER Refresher
- 8-hour Hazardous Waste Operations and Emergency Response Supervisor training
- 10-hour OSHA Construction Safety training, Supervisor training, and CRP/FA/BBP training (PSO only)

6c. List major equipment i.e. cranes, dozers, vessels etc.
Major equipment required to complete tasks detailed in Section 5c includes HSA drill rig and a Geoprobe drill rig.

6d. List special equipment i.e. radioactive equipment (Moisture Density Gage) etc.
Special equipment to be utilized during the OU-2 scope of work includes but is not limited to a photo-ionization detector (PID), flame-ionization detector (FID), multi-gas meters, and global positioning system (GPS) tools.

7. Responsibility & Authority - Who is responsible for safety?

Project Safety Officer:	**Corporate Health and Safety Manager:**	**Field Team Leader:**	**Line of Authority?**
Toby Ledbetter (Bldgs) Doug Auld (Soil) Eugene Boesch (Bldg Recordation)	Charles Myers, CHMM, CIH, CIPS, CPEA	Toby Ledbetter (Bldgs) Doug Auld (Soil) Eugene Boesch (Bldg Recordation)	Toby Ledbetter (Bldgs) Doug Auld (Soil)

8. Who will conduct safety inspection?	**8a. How?**	**8b. When?**
Toby Ledbetter/Doug Auld/Mark McGowan/Jane Weber	Safety Inspections will be conducted by the PSO and the CHSM	PSO – Monthly CHSM – Random
9a. Is safety & health policy attached?	**9b. Is safety program attached?**	**9c. Day & hour weekly safety meeting to be held:**
Yes. Detailed in the Site-Wide Site Safety and Health Plan for All Operable Units (OU-1 through OU-4)	Yes. Appendix A of the Site-Wide Site Safety and Health Plan for All Operable Units (OU-1 through OU-4)	Once per day prior to work start

10. How will subcontractor & supplies be controlled?	**11. What are their safety responsibilities?**
Malcolm Pirnie will monitor each subcontractor's compliance with the requirements of USACE's Safety and Health Requirements Manual, EM 385-1-1, this SSHP, and all applicable federal, state, and local regulations.	Subcontractors are responsible for their employees' health and safety, PPE, and providing required training, medical clearances, and compliance with the provisions of their SSHP documentation for all employees on-site.

ACCIDENT PREVENTION PROGRAM
ADMINISTRATIVE PLAN
OPERABLE UNIT TWO (OU-2)
(EM385-1-1 (Nov 03) Pages 3,4 & App A)

12. Who will report accidents, exposure data?
Field Team Leader, PSO, and/or CHSM

13. Medical Support – Outline on-site medical support and off-site medical arrangements:
On-site medical support: The PSO is the primary authority for directing operations at the Site under emergency conditions. The PSO will have 8-hour Hazardous Waste Operations and Emergency Response Supervisor training, 10-hour OSHA Construction Safety training, Supervisor training, and CRP/FA/BBP training. Emergency equipment such as fire extinguishers, first aid kit, and eye wash will be kept on-site.

Off-site medical arrangements: The two hospitals located in the vicinity of the Cornell-Dubilier site are the JFK Medical Center in Edison, NJ and the Muhlenberg Medical Center in Plainfield, NJ. Site maps are provided in the SSHP.

14. Outline procedures for conducting hazard assessments & written certification of PPE	**Who?**	**When?**	**How?**
Review proposed work tasks.	PSO	Prior to conducting site work.	Review of proposed work scope.
Assess potential hazards associated with work area.	Field Team Leader/PSO	Prior to conducting site work.	Review of Attachment B (OU-2) of the Site-Wide Safety and Health Plan.
Identify potential routes of entry and points of contact with hazards.	Field Team Leader/PSO	Prior to conducting site work.	Review of Attachment B (OU-2) of the Site-Wide Safety and Health Plan.
Review airborne contaminant action levels (specified in the Safety Plan) relative to known hazards.	PSO	Prior to conducting site work.	Review of Attachment B (OU-2) of the Site-Wide Safety and Health Plan. Note that air monitoring will not be performed.
Identify the appropriate PPE ensemble for project work activities.	PSO	Prior to conducting site work.	Review of Attachment B (OU-2) of the Site-Wide Safety and Health Plan.
Regularly assess site hazards to determine if/when PPE ensemble modifications are appropriate.	Field Team Leader/PSO	Daily	Through awareness and continuous review of site activities throughout project duration.

15. Names of first aid attendants having certificates	**Type of certificate & expiration date**	**Names of USCG licensed boat operators. Type licence & expiration date.**
Mark McGowan	Adult First Aid and CPR	N/A
Toby Ledbetter	Adult First Aid and CPR	
Kevin Pavese	Adult First Aid and CPR	
Brad Walker	Adult First Aid and CPR	
Jane Weber	Adult First Aid and CPR	
Doug Auld	Adult First Aid and CPR	

ACCIDENT PREVENTION PROGRAM
ADMINISTRATIVE PLAN
OPERABLE UNIT TWO (OU-2)
(EM385-1-1 (Nov 03) Pages 3,4 & App A)

Proposed layout of temporary buildings and facilities (including subcontractors) and traffic patterns including access roads, haul roads, R.R.s. utilities, etc.

Temporary construction trailers are located within a limited area on the southeastern portion of the former CDE facility. There are no permanent site buildings. There are no access or haul roads within the proposed project area (open site). Traffic flow into and out of the site is achieved via Spicer Avenue to Hamilton Avenue to the south of the former CDE facility.

The **Malcolm Pirnie, Inc.** (Company) will pursue a positive program of training, inspections and hazard control throughout the term of this contract. **Charles Myers, CHMM, CIH, CIPS, CPEA** has responsibility and authority for enforcing them.

Contractor's Signature	July 2006 Date	C.O.R. Signature and Date

MVN Form 385-43R
Nov 2003

Proponent: CEMVN-SS

R2-0000242

3.0 PROJECT ORGANIZATION AND RESPONSIBILITY FOR OU-2

Malcolm Pirnie personnel who have health and safety responsibility for OU-2 Buildings and OU-2 Soils work are summarized below in Tables B3-1 through B3-3. Note that certain personnel listed below differ from those cited in the original stand-alone OU-2 SSHP documentation due to staffing changes.

Table B3-1: Malcolm Pirnie OU-2 Buildings Personnel

PROJECT ROLE	NAME	CONTACT INFORMATION
Project Manager	Edward Dudek, PE	W: (914) 641-2686
Deputy Project Manager	Ben Girard	W: (716) 667-6645
Corporate Health and Safety Manager	Charles Myers, CHMM, CIH, CIPS, CPEA	W: (914) 484-7151
Health and Safety QA/QC Officer	Charles Myers, CHMM, CIH, CIPS, CPEA	W: (914) 484-7151
Project Safety Officer	Toby Ledbetter	W: (914) 641-2550
Alternate Project Safety Officer	Kevin Pavese	W: (914) 641-2421
Field Team Leader	Toby Ledbetter	W: (914) 641-2550
Alternate Field Team Leader	Kevin Pavese	W: (914) 641-2421
Alternate Field Team Leader	Ben Girard	W: (716) 667-6645

Table B3-2: Malcolm Pirnie OU-2 Soils Personnel

PROJECT ROLE	NAME	CONTACT INFORMATION
Project Manager	Edward Dudek, PE	W: (914) 641-2686
Deputy Project Manager	Ben Girard	W: (716) 667-6645
Project Certified Industrial Hygienist	Charles Myers, CHMM, CIH, CIPS, CPEA	W: (914) 484-7151
Health and Safety QA/QC Officer	Charles Myers, CHMM, CIH, CIPS, CPEA	W: (914) 484-7151
Project Safety Officer	Doug Auld	W: (201) 398-4351
Alternate Project Safety Officer	Brad Walker	W: (716) 667-6650
Field Team Leader	Doug Auld	W: (201) 398-4351
Alternate Field Team Leader	Brad Walker	W: (716) 667-6650
Alternate Field Team Leader	TBD	

Table B3-3: Malcolm Pirnie OU-2 Historical Recordation Personnel

PROJECT ROLE	NAME	CONTACT INFORMATION
Project Manager	Edward Dudek, PE	W: (914) 641-2686
Deputy Project Manager	Ben Girard	W: (716) 667-6645
Project Certified Industrial Hygienist	Charles Myers, CHMM, CIH, CIPS, CPEA	W: (914) 484-7151
Health and Safety QA/QC Officer	Charles Myers, CHMM, CIH, CIPS, CPEA	W: (914) 484-7151
Project Safety Officer	Eugene Boesch	W: (914) 694-2100 C: (845) 803-1182
Alternate Project Safety Officer	TBD	
Field Team Leader	Eugene Boesch	W: (914) 694-2100 C: (845) 803-1182
Alternate Field Team Leader	TBD	

4.0 POTENTIAL HEALTH AND SAFETY HAZARDS AND CONTROLS FOR OU-2

4.1 ENVIRONMENTAL SAMPLING ACTIVITIES – OU-2 BUILDINGS

The field sampling at the Site will aid in identifying the extent of asbestos, mercury and PCB materials, and metals contamination at the Site Buildings. Detailed descriptions of sampling activities are outlined in the FSP ('OU-2'). This attachment includes the Task Hazard Analysis (Table B4-1) for the following:

- Asbestos investigation and sampling;
- Mercury and PCB-containing materials inventory;
- PCB-containing materials investigation and sampling;
- Metals and PCB core sampling;
- Quantity takeoff survey of Site building materials;

General physical and biological hazards and monitoring/control methods are also addressed in this section.

Table B4-1: Task Hazard Analysis – OU-2 Buildings

TASK	INHALATION HAZARDS	INGESTION/ DERMAL CONTACT	RADIATION	SLIPS AND FALLS	LIFTING HAZARDS	HEAT STRESS	COLD STRESS
Asbestos investigation and sampling	X	X		X		X	X
PCB and metals investigation and sampling	X	X		X	X	X	X
Quantity take-off survey of building materials				X		X	X

Table B4-1: Task Hazard Analysis – OU-2 Buildings (continued)

TASK/STEP	HAZARDS	CONTROLS
Asbestos investigation and sampling	Inhalation Hazards (Asbestos)	Engineering controls including the use of amended water saturation will be used when sampling. Use of PPE, including respirators, may be required and discussed below. Decontamination of personnel, equipment, and PPE, and waste disposal are discussed in Section 12.0. Adherence to safety standard operating procedures is discussed in Section 12.0. Exposure monitoring may be conducted at the discretion of the CHSM.
	Ingestion/Dermal Contact	Use of PPE, including gloves, is required and discussed below. Proper hygiene practices will be used. Decontamination of personnel, equipment, and PPE, and waste disposal are discussed in Section 4. Adherence to safety standard operating procedures is discussed in Section 12.0.
	Slips and Falls	Leather safety boots with steel-toes to protect against sharp or heavy objects when on land. Observe the buddy system. Practice good work area housekeeping (e.g., keep walkways clear of equipment).
	Lifting Hazards	Use proper lifting techniques (e.g., bend legs, not back). Use an individual limit of 40 pounds. Use more than one person to lift objects that are bulky/awkward. Lifting safety is described in Section 4.5.6 of this attachment.
	Coring Tools	Use equipment with Ground Fault Circuit Interruptors (GFCIs). Wear proper work gloves, safety glasses, and face shield. Unplug tools when changing drill bits.
	Heat Stress	Wear appropriate clothing. Shorter work shifts/frequent breaks during extreme weather conditions. Exposure monitoring and weather-related clothing for heat stress is described in Section 6.0 of the Overall Site Safety and Health Plan Document.
	Cold Stress	Wear appropriate clothing. Shorter work shifts/frequent breaks during extreme weather conditions. Exposure monitoring and weather-related clothing for cold stress is described in Section 6.0 of the Overall Site Safety and Health Plan Document.

Table B4-1: Task Hazard Analysis – OU-2 Buildings (continued)

TASK/STEP	HAZARDS	CONTROLS
PCB and metals investigation and sampling	Inhalation Hazards (PCB/Particulates, Silica, Lead, Metals)	Engineering controls including water sprays will be used when drilling or coring to reduce dust generation. Use of PPE, including respirators, may be required and discussed below. Decontamination of personnel, equipment, and PPE, and waste disposal are discussed in Section 11.0. Adherence to safety standard operating procedures is discussed in Section 12.0. Exposure monitoring may be conducted at the discretion of the CHSM.
	Ingestion/Dermal Contact	Proper hygiene practices will be used. Use of PPE, including gloves, is required and discussed below. Decontamination of personnel, equipment, and PPE, and waste disposal are discussed in Section 11.0. Adherence to safety standard operating procedures is discussed in Section 12.0.
	Slips and Falls	Leather safety boots with steel-toes to protect against sharp or heavy objects when on land. Observe the buddy system. Practice good work area housekeeping (e.g., keep walkways clear of equipment).
	Lifting Hazards	Use proper lifting techniques (e.g., bend legs, not back). Use an individual limit of 40 pounds. Use more than one person to lift objects that are bulky/awkward. Lifting safety is described in Section 4.5.6 of this attachment.
	Coring Tools	Use equipment with Ground Fault Circuit Interruptors (GFCIs). Wear proper work gloves, safety glasses, and face shield. Unplug tools when changing drill bits.
	Heat Stress	Wear appropriate clothing. Shorter work shifts/frequent breaks during extreme weather conditions. Exposure monitoring and weather-related clothing for heat stress is described in Section 7.0 of the Site-wide SSHP.
	Cold Stress	Wear appropriate clothing. Shorter work shifts/frequent breaks during extreme weather conditions. Exposure monitoring and weather-related clothing for cold stress is described in Section 7.0 of the Site-wide SSHP.

4.2 ENVIRONMENTAL SAMPLING ACTIVITIES – OU-2 SOILS

The field sampling at the Site will aid in identifying the extent of VOCs, SVOCs, PCBs, dioxins/furans, metals/cyanide, and pesticides contamination in Site soils. Detailed descriptions of sampling activities are outlined in the FSP ('OU-2'). The SSHP includes the Task Hazard Analysis (Table B4-2) for the following:

- Soil investigation and sampling;
- Habitat Assessment.

General physical and biological hazards and monitoring/control methods are also addressed in this section.

Table B4-2: Task Hazard Analysis – OU-2 Soils

TASK	Soil investigation and sampling including: Drilling oversight, Split-spoon sample processing, shovel testing, equipment decontamination
INHALATION HAZARDS	X
INGESTION/ DERMAL CONTACT	X
SLIPS AND FALLS	X
LIFTING HAZARDS	X
OVERHEAD HAZARD	X
HEAT/COLD STRESS	X

Table B4-2: Task Hazard Analysis – OU-2 Soils (continued)

TASK/STEP	HAZARDS	CONTROLS
Soil investigation and sampling including: Drilling oversight, Split-spoon sample processing, shovel testing, equipment decontamination.	Inhalation Hazards (VOCs, PCB/Particulates,)	Engineering controls including water sprays will be used as necessary during drilling to reduce dust generation. Use of PPE, including respirators, may be required and discussed below. Decontamination of personnel, equipment, and PPE, and waste disposal are discussed in Section 11.0 of the Site-wide SSHP. Adherence to safety standard operating procedures is discussed in Section 12.0. Exposure monitoring may be conducted at the discretion of the PCIH.
	Ingestion/Dermal Contact	Proper hygiene practices will be used. Use of PPE, including gloves, is required and discussed below. Decontamination of personnel, equipment, and PPE, and waste disposal are discussed in Section 11.0. Adherence to safety standard operating procedures is discussed in Section 12.0.
	Slips and Falls	Leather safety boots with steel-toes to protect against sharp or heavy objects. Observe the buddy system. Practice good work area housekeeping (e.g., keep walkways clear of equipment).
	Lifting Hazards	Use proper lifting techniques (e.g., bend legs, not back). Use an individual limit of 40 pounds. Use more than one person to lift objects that are bulky/awkward. Lifting safety is described in Section 4.5.6 of this attachment.
	Sharp Objects	Use proper precautions when working with sharp objects or walking near sharp objects. Precautions include avoidance of sharp objects, observing objects in the walking path, use of PPE including leather safety boots with steel-toes.
	Heat Stress	Wear appropriate clothing. Shorter work shifts/frequent breaks during extreme weather conditions. Exposure monitoring and weather-related clothing for heat stress is described in Section 7.0 of the Site-wide SSHP.
	Cold Stress	Wear appropriate clothing. Shorter work shifts/frequent breaks during extreme weather conditions. Exposure monitoring and weather-related clothing for cold stress is described in Section 7.0 of the Site-wide SSHP.

Table B4-2: Task Hazard Analysis– OU-2 Soils (continued)

TASK	Habitat Assessment including: wetlands delineation and time meander search for threatened/endangered flora
INGESTION/ DERMAL CONTACT	X
SLIPS AND FALLS	X
HEAT/COLD STRESS	X

TASK/STEP	HAZARDS	CONTROLS
Habitat Assessment including: wetlands delineation and time meander search for threatened/endangered flora	Ingestion/Dermal Contact	Proper hygiene practices will be used. Use of PPE, including gloves, is required and discussed below. Decontamination of personnel, equipment, and PPE, and waste disposal are discussed in Section 11.0. Adherence to safety standard operating procedures is discussed in Section 12.0.
	Slips and Falls	Leather safety boots with steel-toes to protect against sharp or heavy objects. Observe the buddy system. Practice good work area housekeeping (e.g., keep walkways clear of equipment).
	Sharp Objects	Use proper precautions when working with sharp objects or walking near sharp objects. Precautions include avoidance of sharp objects, observing objects in the walking path, use of PPE including leather safety boots with steel-toes.
	Heat Stress	Wear appropriate clothing. Shorter work shifts/frequent breaks during extreme weather conditions. Exposure monitoring and weather-related clothing for heat stress is described in Section 7.0 of the Site-wide SSHP.
	Cold Stress	Wear appropriate clothing. Shorter work shifts/frequent breaks during extreme weather conditions. Exposure monitoring and weather-related clothing for cold stress is described in Section 7.0 of the Site-wide SSHP.

4.3 ENVIRONMENTAL SAMPLING ACTIVITIES – OU-2 HISTORICAL RECORDATION

The potential health and safety hazards associated with the tasks to be performed by the HABS/HAER Recordation Activities subcontractor are listed in Table B4-3, Task Hazard Analysis. The Task Hazard Analysis below includes an additional Task Hazard Analysis and controls for work that is specific to the HABS/HAER Recordation Activities subcontractor.

Work will be performed in accordance with the protection required for employees exposed to fall hazards in OSHA, 29 CFR 1926, Part M. Some of the specific requirements include the following:

- The aerial device to be used will be obtained from a reputable rental company which is able to provide documentation of routine maintenance.
- Aerial devices will comply with all state and federal regulations concerning the use and operation of motor vehicles, if applicable.
- Stairways and platforms on aerial devices shall have skid-resistant treads.
- Only experienced and appropriately trained competent persons will be permitted to operate aerial devices.
- The aerial device will be tested on-site, and all its parts extended and examined immediately prior to its use.
- An ABC rated fire extinguisher will be located within 10 feet of the aerial device.
- Rated load capacities will be conspicuously posted and not exceeded.
- Set parking brake when vehicle is stopped or parked.
- Audible back-up alarms are required for all aerial devices.
- A personal fall arrest (PAF) system consists of a body harness or body belt, an anchorage and a lanyard. Employees will utilize a PAF system at all times when they are on aerial devices.
- Utilize other PPE including but not limited to safety shoes with a slip-resistant sole, a hard hat, suitable gloves, and a reflective vest.
- Training will be provided, will be specific to the aerial device to be utilized and will include the proper use of the PAF system.
- At no time will staff be permitted to climb on or off devices which are elevated.

- Review and note the location of power lines and any other potential above-ground hazards. Maintain a distance of at least 20 feet from live electric lines.
- Avoid pinch points.
- Practice good housekeeping to minimize slip and fall hazards.
- Bring only essential equipment onto aerial devices and secure it from falling.
- Review traffic patterns and traffic hazards. If the aerial device is to be utilized within the right-of-way for a roadway, obtain the services of a professional traffic controller, such as a police officer and provide traffic cones, as needed in accordance with federal, state and local laws.

Table B4-3: Task Hazard Analysis – OU-2 Historical Recordation

TASK/STEP	HAZARDS	CONTROLS
Recordation Activities on Aerial Devices	Fall from an aerial device	Use a device suitable to the work to be performed. Obtain the device from a reputable company and retain the services of a trained, experienced operator. Allow time for training and to become familiar with the use and limitation of the device. Examine all parts and extend the device prior to using it to elevate employees to ensure that it is in good working order. Use professional traffic control Practice good housekeeping and bring only necessary equipment on the aerial device and secure it. Wear PPE including leather safety boots with steel-toes and slip-resistant soles, a reflective vest, suitable gloves, and a hard hat. Wear a body belt and a lanyard attached to the device at all times. Do not climb on or off device while it is in the raised position. Note the location of power lines and other overhead hazards. Avoid pinch points.
	Traffic	Consider planning to avoid traffic hazards. If avoidance is not possible, utilize the services of a traffic control professional and obey directions. Wear PPE including a reflective vest. Provide traffic cones or other devices as directed by the traffic control professional.

Personnel are not permitted within the access radius of an operating aerial device. Malcolm Pirnie will ensure that personnel are warned from the area under an operating lift.

4.4 CHEMICAL HAZARDS

Table B4-3 lists OSHA Permissible Exposure Limits ('PELs'), American Conference of Governmental Industrial Hygienists ('ACGIH') Threshold Limit Values ('TLVs'),

Immediately Dangerous to Life or Health ('IDLH') concentrations, routes of exposure, and physicochemical properties for these chemicals. Table B4-4 lists contaminants known to be present at the Cornell-Dubilier Superfund Site and the known peak concentrations in building dust.

Table B4-4: PELs, TLVs and IDLHs for Dust Contaminants

CONSTITUENT	PELS	TLVS	IDLH
Arsenic	0.5 mg/m³	10 µg/m³	NA
Asbestos	0.1 f/cc	0.1 f/cc	NA
Barium	0.5 mg/m³	0.5 mg/m³	50 mg/m³
Cadmium	10 µg/m³	5 µg/m³	9 mg/m³
Chromium	0.5 mg/m³	0.5 mg/m³	NA
Copper (dust)	1 mg/m³	1 mg/m³	100 mg/m³
Lead	50 µg/m³	50 µg/m³	100 mg/m³
Mercury	C 0.1 mg/m³	25 µg/m³	10 mg/m³
Nickel	1 mg/m³	1.5 mg/m³	10 mg/m³
PCB's 42%	1 mg/m³	1 mg/m³	5 mg/m³
PCB's 54%	0.5 mg/m³	0.5 mg/m³	5 mg/m³
Selenium	0.2 mg/m³	0.2 mg/m³	1 mg/m³
Silver	0.01 mg/m³	0.1 mg/m³	10 mg/m³
Silica	50 µg/m³	10 mg/m³/%Q+2	50 mg/m³
Total Dust	10 mg/m³	15 mg/m³	NA

Table B4-5: Contaminants of Concern – Site Dust Concentrations

Contaminant in Building Dust	Highest Detected Concentration
Mercury	24.4 ppm

PCBs	8300 ppm
Arsenic	100 ppm
Cadmium	428 ppm
Chrome	894 ppm
Lead	61700 ppm

Table B4-6 lists OSHA PELs, the ACGIH TLVs, and IDLH concentrations, routes of exposure, and physicochemical properties for these chemicals. Table B4-7 lists contaminants known to be present at the Cornell-Dubilier Superfund Site and the known peak concentrations in Site soils.

Table B4-6: PELs, TLVs and IDLHs for Soils Contaminants

CONSTITUENT	PELs	TLVs	IDLH
Aldrin	0.25 mg/m³	0.25 mg/m³	25 mg/m3
Arsenic	0.5 mg/m³	10 µg/m³	NA
Barium	0.5 mg/m³	0.5 mg/m³	50 mg/m³
Cadmium	10 µg/m³	5 µg/m³	9 mg/m³
Chromium	0.5 mg/m³	0.5 mg/m³	NA
Copper (dust)	1 mg/m³	1 mg/m³	100 mg/m³
4, 4'-DDT	1 mg/m³	1 mg/m³	500 mg/m3
Dieldrin	0.25 mg/m³	0.25 mg/m³	25 mg/m3
Lead	50 µg/m³	50 µg/m³	100 mg/m³
Mercury	C 0.1 mg/m³	25 µg/m³	10 mg/m³
Nickel	1 mg/m³	1.5 mg/m³	10 mg/m³
PCB's 42%	1 mg/m³	1 mg/m³	5 mg/m³
PCB's 54%	0.5 mg/m³	0.5 mg/m³	5 mg/m³
Selenium	0.2 mg/m³	0.2 mg/m³	1 mg/m³
Silver	0.01 mg/m³	0.1 mg/m³	10 mg/m³

CONSTITUENT	PELs	TLVs	IDLH
Silica	50 µg/m³	10 mg/m³/%Q+2	50 mg/m³
Trichloroethylene	100 mg/m³	54 mg/m³	1,000 ppm
Tetrachloroethylene	170 mg/m³	100 mg/m³	150 ppm
Total Dust	10 mg/m³	15 mg/m³	NA

Table B4-7: Contaminants of Concern – Site Soil Concentrations

Contaminant in OU-2 Soils	Highest Detected Concentration
Aldrin	1,100 ppm
Arsenic	1,060 ppm
Barium	10,000 ppm
Cadmium	428 ppm
Chromium	408 ppm
Copper	57,600 ppm
4, 4'-DDT	25,000 ppm
Dieldrin	11,000 ppm
Lead	66,600 ppm
Mercury	24.4 ppm
Nickel	545 ppm
Total PCBs	130 ppm
Selenium	9.8 ppm
Silver	85.9 ppm
Trichloroethylene	47 ppm
Tetrachloroethylene	6.6 ppm

4.5 PHYSICAL HAZARDS

All of the field activities at the will occur at the Cornell-Dubilier Site as outlined in the FSP ('OU-2'). The following subsections discuss physical hazards that may be encountered during field activities, and control measures with which to minimize the potential for an incident.

4.5.1 Heat Stress

Exposure monitoring and actions required for heat stress are described in Section 7.0 of the Overall SSHP.

4.5.2 *Cold Stress*

Exposure monitoring and required actions for cold stress are described in Section 7.0 of the Overall SSHP.

4.5.3 *Noise*

Malcolm Pirnie requires the use of hearing protection by all employees when noise levels exceed 85 decibels. Hearing protection will be used which yields a Noise Reduction Rating ('NRR') that reduces the noise level to below 80 dBA when placed in the ear canal.

Hazards

The OSHA PEL of 90 decibels may be exceeded on or near heavy equipment, such as drilling rigs or vibracoring equipment without hearing protection according the schedule of exposures below. A sound level meter (SLM), operating in the dBA mode, will be used to assess employee exposures when personnel are working.

Table B4-8: Permissible Noise Exposures[1]

Duration per day, hours	Sound level dBA, slow response
8	90
6	92
4	95
3	97
2	100
1 ½	102
1	105
½	110
¼ or less	115

Footnote(1) When the daily noise exposure is composed of two or more periods of noise exposure of different levels, their combined effect should be considered, rather than the individual effect of each. If the sum of the following fractions: C(1)/T(1) + C(2)/T(2) C(n)/T(n) exceeds unity, then, the mixed

exposure should be considered to exceed the limit value. Cn indicates the total time of exposure at a specified noise level, and Tn indicates the total time of exposure permitted at that level. Exposure to impulsive or impact noise should not exceed 140 dB peak sound pressure level.

Control Measures

Site workers will wear hearing protection when the noise levels exceed 85 decibels. In addition, all Malcolm Pirnie personnel must undergo an initial employment, annual, and employment termination examination, during which an audiogram is conducted.

4.5.4 Slip, Trip, and Fall Hazards

Hazards

Irregularities of surface conditions and elevations at the site and within site buildings may pose a slip, trip, fall, or puncture hazards to workers. Protruding materials (*e.g.* nails in boards, broken glass) may cause puncture hazards. Trip hazards include tenant materials such as boxes, wooden palettes, and other miscellaneous materials. There are potential hazards from the presence of wet areas, puddles, oil and grease, debris, or other obstructions that may be within passageways or walkways.

Within Site buildings, irregular, slippery, and/or narrow walkways may pose potential slip, trip, and fall hazards to workers. Additionally, catwalks within site buildings may pose fall hazards due to the deterioration of many of the catwalk materials. For this reason, ***Malcolm Pirnie staff will not conduct any field activities on building catwalks.***

Control Measures

Slip, trip, and fall hazards must be controlled by exercising care and caution when working at the Site. Good housekeeping practices must be maintained for work areas. Field personnel will be briefed by the PSO each morning on the location and type of obvious hazards in the work areas.

Site workers are to take care in areas where ground irregularities or protruding objects exist and may not be observed due to vegetation. Such objects will be flagged or marked with traffic cones when observed. Site workers are to take care within Site buildings where irregular, slippery, and/or narrow walkways may pose potential slip, trip, and fall hazards. Alternate routes to and from the work area will be evaluated by the PSO. The safest routes will be pointed out during the daily planning meeting and unsafe routes will be cordoned off with hazard tape. Routes with potential hazards that are unavoidable will be posted with hazard warnings. Field personnel will wear 6", over the ankle, steel-toed, chemically resistant leather work boots with a defined heel and traction soles to protect against sharp or heavy objects and to protect against uneven or slippery walkways.

4.5.5 Sanitation

Field activities will be conducted in accordance with the OSHA sanitation standard (29 CFR 1910.141). The field office will be equipped with sanitary toilet facilities and potable water for washing.

4.5.6 Lifting Safety

Hazards

Lifting and moving of heavy or awkwardly-balanced objects may result in injury. Lifting and moving of sampling equipment may involve heavy or awkward items.

Control Measures

Using proper lifting techniques may prevent back strain or injury. The fundamentals of proper lifting include:

- Consider the size, shape, and weight of the object to be lifted. A mechanical lifting device (such as a winch to deploy and retrieve water sampling equipment) or additional persons must be used to lift an object if it cannot be lifted safely alone.

- The hands and the object should be free of dirt or grease that could prevent a firm grip.
    - Gloves must be used, and the object inspected for metal slivers, jagged edges, burrs, or rough or slippery surfaces.
    - Fingers must be kept away from points that could crush or pinch them, especially when putting an object down.
- Feet must be placed far enough apart for balance. The footing should be solid and the intended pathway should be clear.
- The load should be kept as low as possible, close to the body with the knees bent.
- To lift the load, grip firmly and lift with the legs, keeping the back as straight as possible.
- A worker should not carry a load that he or she cannot see around or over.
- When putting an object down, the stance and position are identical to that for lifting; the legs are bent at the knees, and the back is straight as the object is lowered.

4.5.7 Ladder Safety

Hazards

Ladder accidents usually are caused by improper selection, care or use, not by manufacturing defects. Some of the more common hazards involving ladders, such as instability, electrical shock, and falls, can be predicted and prevented. Prevention requires proper planning, correct ladder selection, good work procedures and adequate ladder maintenance.

Control Measures

- Ladders shall be placed with a secure footing, or they shall be lashed, cleated, or held in position.
- Ladders used to gain access to a roof or other area shall extend at least 3 feet above the point of support.
- The top two steps of a regular stepladder shall not be used as steps.
- Use three points of contact when climbing or descending ladders.

- Always face the ladder while ascending or descending.
- Short ladders shall not be spliced together to make long ladders.
- Ladders shall never be used in the horizontal position as scaffolds or work platforms.
- Metal ladders shall never be used near electrical equipment.
- A ladder shall be provided at all personnel points of access where there is a break in elevation of 19 inches or more, and no ramp, runway, sloped embankment, or personnel hoist is provided.
- Do not hand-carry loads on a ladder.
- Do not try reaching so far that you lose your balance, keep your belt buckle between the rails or move the ladder.
- Non-skid feet or spurs may prevent a ladder from slipping on a hard, smooth surface.
- A damaged side rail may cause one side of a ladder to give way.
- Extension ladders need both locks holding to prevent overloading a rail.
- Step ladders should be securely spread open. Never use a folding step ladder in an unfolded position.
- Electrical shock can occur with metal or wet wooden ladders. Not only is the shock itself dangerous, but it can cause falls resulting in injury.

Ladder Selection

Portable ladders are designed as "one-man" equipment with the proper strength to support the worker as well as his tools and materials. Ladders are constructed under three general classes:

- Industrial - Heavy-duty with a load capacity of not more than 250 lbs.
- Commercial - Medium-duty with a load capacity of not more than 225 lbs. (Suited for painting.)
- Household - Light-duty with a load capacity of 200 lbs.

Step Ladders

- Be certain the spreader is locked before climbing on the ladder.
- Never stand on the top or top step of a stepladder.

Extension and Straight Ladders

- Raise the extension ladder to the desired height and lock both sides.
- Never stand on the top three rungs of a straight or extension ladder.
- Don't lean a ladder against a movable object.
- Always face the ladder and hold onto the side rails with both hands, when going up or down the ladder.

Proper Ladder Placement

The ladder should be placed so that its base is one foot away from what the ladder leans against for every four feet in height to the point where the ladder rests. This is referred to as the four-to-one rule. For example, if a 16 foot ladder leans against a wall, its base should be placed four feet from the wall.

Ladder Maintenance

Wood ladders should be protected with a clear sealer varnish, shellac, linseed oil or wood preservative. Wood ladders should not be painted, because the paint could hide defects. Check carefully for cracks, rot, splinters, broken rungs, loose joints and bolts and hardware in poor condition.

Aluminum or steel ladders should be inspected for rough burrs and sharp edges before use. Inspect closely for loose joints and bolts, faulty welds and cracks. Make sure the hooks and locks on extension ladders are in good condition. Replace worn or frayed ropes on extension ladders at once.

Fiberglass ladders should have a surface coat of lacquer maintained. If it is scratched beyond normal wear, it should be lightly sanded before applying a coat of lacquer.

4.5.8 *Overhead Hazards*

There are no overhead hazards anticipated which are associated with the sampling program within the on-site buildings.

4.6 BIOLOGICAL HAZARDS

Rats, feral dogs, and raccoons may pass through or inhabit parts of the site. Rats and raccoons that are outside during daylight are to be avoided as they may be rabid. Feral dogs may travel in packs. Never turn your back and run. Never turn your back and run. Face the animal, make as much noise as possible, and move slowly to shelter or your vehicle without breaking eye contact.

5.0 PERSONAL PROTECTIVE EQUIPMENT FOR OU-2

Based upon current information regarding the contaminants present at the Cornell-Dubilier Site and the Task hazard analysis of the tasks to be completed (see Tables B4-1, B4-2, and B4-3), the required levels of personal protection are provided below.

Table B5-1: Required Level of Protection – OU-2 Buildings

Study	Anticipated Level of PPE
Asbestos Investigation and Sampling	Modified Level D
Mercury and PCB-containing Materials Inventory	Level D
PCB-containing Materials Investigation and Sampling	Modified Level D
Metals and PCB Core Sampling Investigation	Modified Level C - D
Quantity Takeoff Survey of Site Building Materials	Level D

Table B5-2: Required Level of Protection – OU-2 Soils

Study	Anticipated Level of PPE
Soil Investigation and Sampling	Level C/Downgrade to Modified Level D based upon air monitoring results discussed in Section 8.
Habitat Assessment	Level D

Table B5-3: Required Level of Protection – OU-2 Historical Recordation

Study	Anticipated Level of PPE
Historical Recordation	Level D

6.0 HEALTH AND SAFETY ORIENTATION TRAINING FOR OU-2

6.1 SPECIALIZED TRAINING

The following specialized training will be required prior to the commencement of field work at OU-2:

- Ladder training for all field team members;
- Lead, Hg (Mercury) and asbestos awareness training for all field team members.

7.0 MEDICAL SURVEILLANCE AND EXPOSURE MONITORING FOR OU-2

7.1 MEDICAL SURVEILLANCE

Blood Lead Testing – Due to the potential for elevated levels of lead dust, employees and subcontractors who will work on the OU-2 portion of the CDE Site for 7 or more days will be included in Malcolm Pirnie's Lead Exposure Program. This Program includes blood lead testing prior to assignment and retesting after the first month, the third month, the sixth month and annually thereafter unless elevated levels are detected. The conclusion of the field work or reassignment from the project will result in the employee receiving a close out blood test.

8.0 HAZARDOUS MATERIAL MONITORING FOR OU-2

As a result of the hazard assessment on the tasks currently described in Section 4.0, exposure monitoring may be required by the PCIH for the following tasks:

- Soil sampling which may include exposure to Lead, PCBs and other constituents of potential concern.

Table 8-1 is the Dust Exposure calculation made from the values in Table 4-3. The dust Action Level is calculated at 0.148 mg/m3. Therefore, the following sampling plan will be instituted:

- Any invasive activity that may result in the accumulated dust becoming airborne will be monitored with a MIE Personal DataRAM using a Level C Action Level of 0.2 mg/m^3.

The concentrations of specific contaminants will be measured as follows:

- At least one personal air sample will be taken on a member of the team who is either near or conducting intrusive sampling activities that might cause dust to become airborne. This sample and one blank will be analyzed by an AIHA Accredited laboratory for lead. Samples will be analyzed within the laboratory's quickest turnaround time. Samples will be collected on three consecutive days or, depending upon schedule, any three days selected by the PSO. An action level of 0.05 mg/m^3 will set for these samples.
- At least one personal air sample will be taken on a member of the team who is either near or conducting intrusive sampling activities that might cause dust to become airborne. This sample and one blank will be analyzed by an AIHA Accredited laboratory for PCBs. Samples will be analyzed within the laboratory's quickest turnaround time.

The use of PPE will be based on the following:

- When disturbing soil in areas with relatively high concentrations of lead (depicted in Figures 4-23 and 4-45 as areas which are colored in yellow and red) Level C PPE will be used. If air sample results do not exceed the action level of 0.05 mg/m3 values, the PPE level will be adjusted to modified Level D.

- Due to elevated concentrations of PCB in site soil in certain areas of the Site (depicted in Figures 4-12, 4-27 and 4-28 as areas which are colored in red), Level C PPE will be used and air samples will be taken as described above. If air sample results do not exceed the OSHA PELs presented in Table 4-3 will result in a PPE downgrade to modified Level D.

Table B8-1: Dust Exposure Calculation Worksheet

Dust Level

Safety Factor for this site = 4

Chemical	Exposure Limit	Maximum Soil Concentration	Exposure Limit Based on Single Compound	Dust Quotient for Each Compound	Problem from Single Compound
	(mg/m3)	(mg/kg)	(EL Mix, mg/m3)	(level/limit)	[3 mg/m3) /EL mix]
Aldrin	0.25	1100	56.81818182	4400	0.0528
Arsenic	0.01	1060	2.358490566	106000	1.272
Barium	0.5	10000	12.5	20000	0.24
Cadmium	0.005	428	2.920560748	85600	1.0272
Chromium	0.5	408	306.372549	816	0.009792
Copper (dust)	1	57600	4.340277778	57600	0.6912
4,4'-DDT	1	25000	10	25000	0.3
Dieldrin	0.25	11000	5.681818182	44000	0.528
Lead	0.05	66600	0.187687688	1332000	15.984
Mercury	0.025	24.4	256.147541	976	0.011712
Nickel	1	545	458.7155963	545	0.00654
PCBs (Total)	0.5	130	961.5384615	260	0.00312
Selenium	0.2	9.8	5102.040816	49	0.000588
Silver	0.01	85.9	29.10360885	8590	0.10308
Trichloroethylene	54	47	287234.0426	0.87037037	1.04444E-05
Tetrachloroethylene	100	6.6	3787878.788	0.066	0.000000792
			Sum	1685836.936	
		Dust Exposure Level at Mixture PEL =	0.148294295		20.23004324

EQUATIONS USED IN THE CALCULATIONS FOR TABLE 8-1

Dust action level = (For one dust)

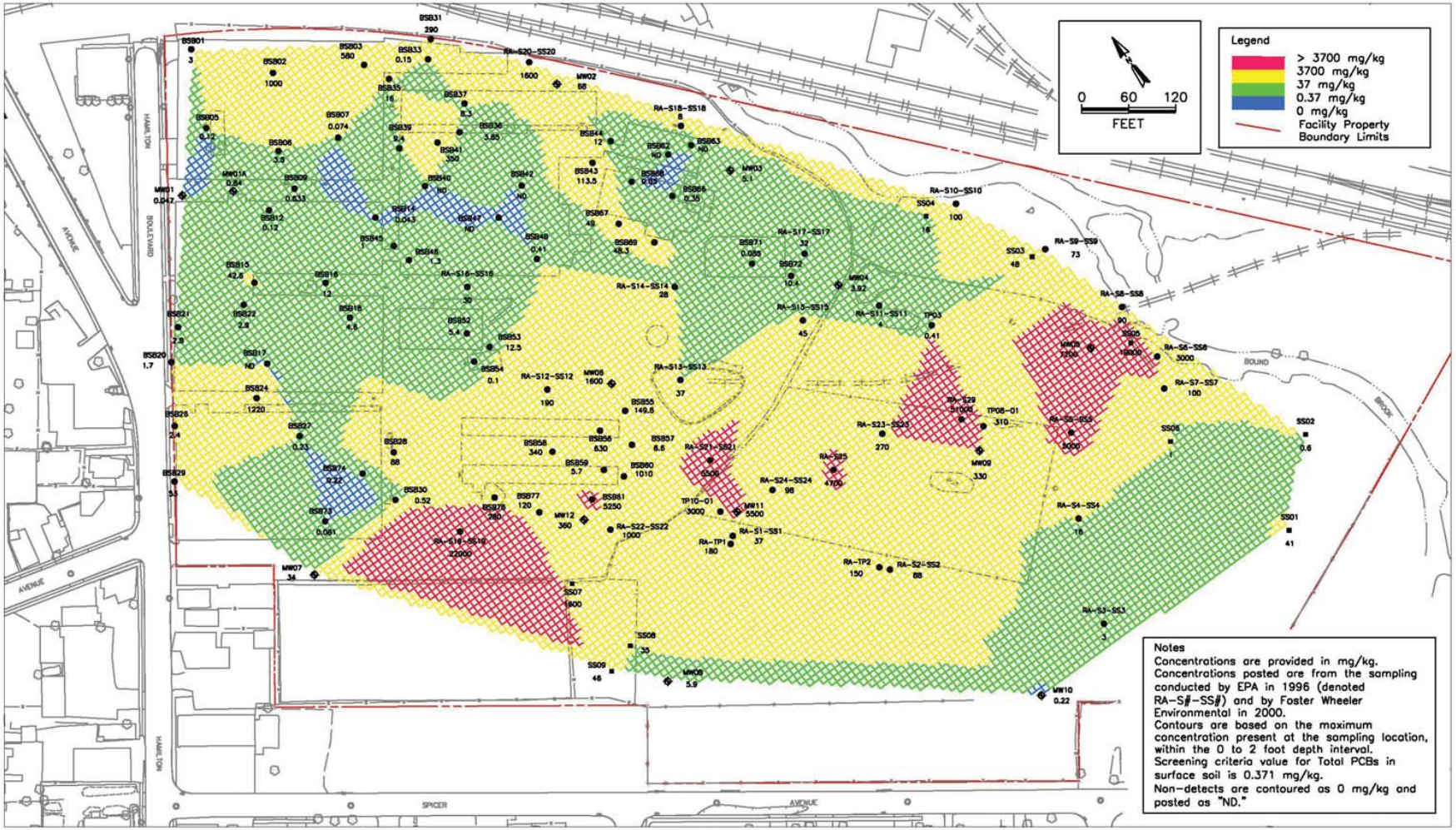
$$\frac{(1E+6)(\text{Exposure Limit mg/m3})}{(\text{Concentration mg/kg})(\text{Safety Factor})}$$

Dust action level = (For mixed dusts)

$$\frac{(1E+6) / (\text{Safety Factor})}{\text{Sum of } [(\text{Concentration mg/kg}) / (\text{Exposure Limit})]}$$

Due to the relatively high concentrations of lead in soil in certain areas of the Site, a Lead Safety Program will be instituted and air monitoring will be conducted as described above.

FIGURES

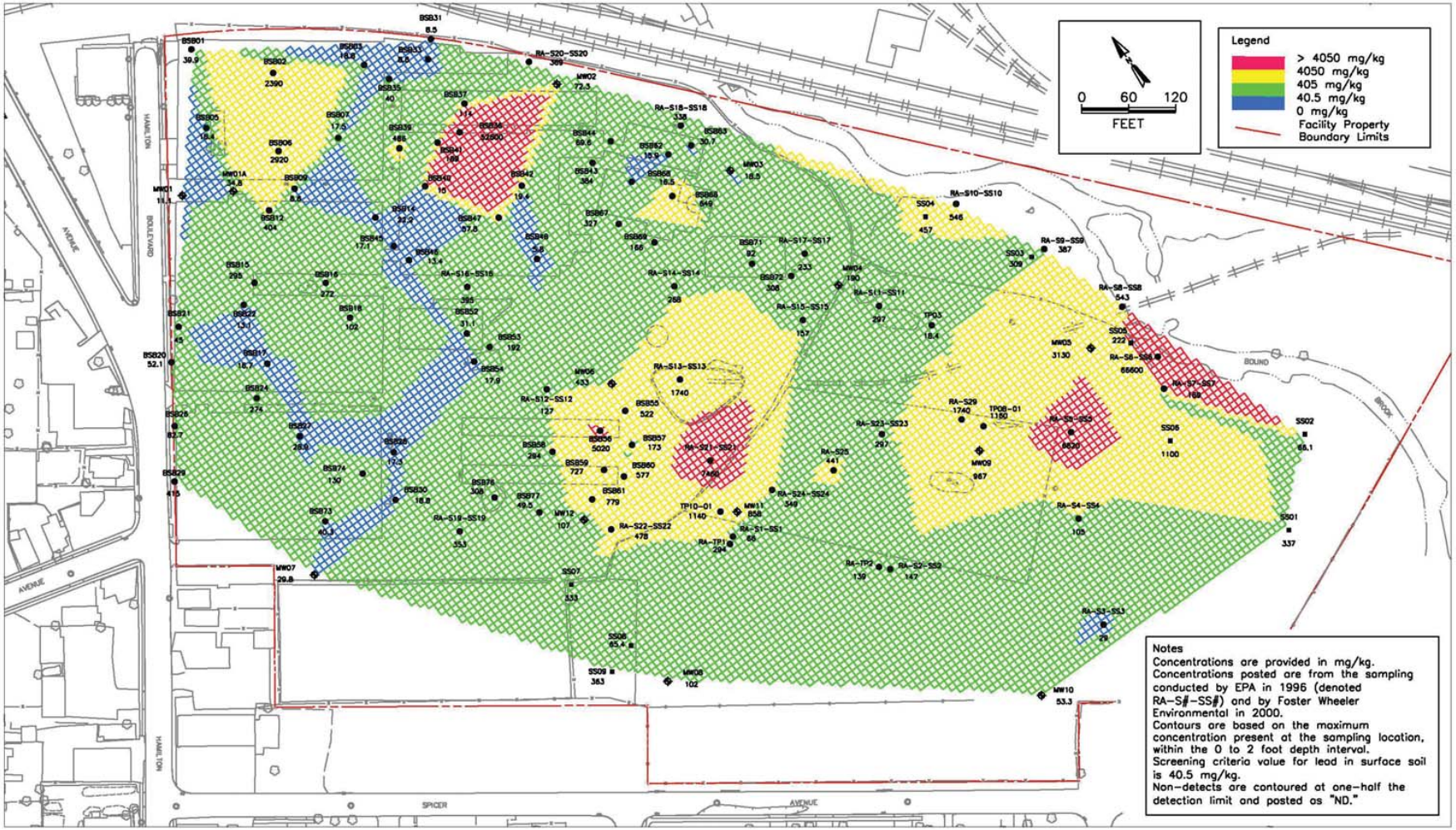


FOSTER WHEELER ENVIRONMENTAL CORPORATION

TITLE:
Horizontal Extent of Total PCB Contamination in Shallow (0 to 2 feet bgs) Soil
Cornell-Dubilier Electronics Superfund Site
Facility Soils and Buildings RI Report

DWN.: LEN	DATE: 05/25/01	PROJECT NO.: 1945.1018	
CHKD: JG	REV.: 1		
DES.: LEN	APPD: LH	FIGURE NO.: 4-12	

R2-0000270

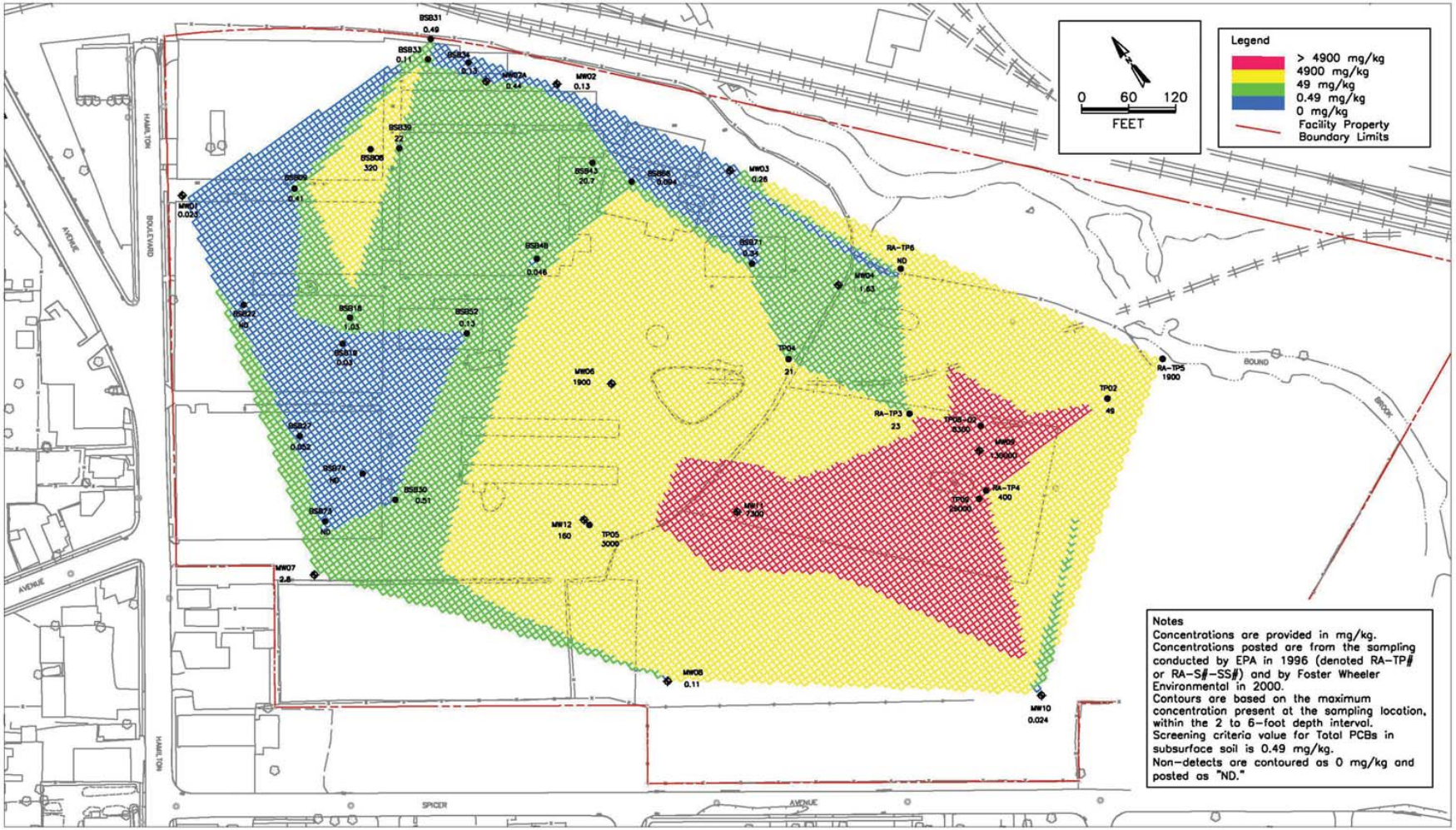


FOSTER WHEELER ENVIRONMENTAL CORPORATION

TITLE:
Horizontal Extent of Lead Contamination in Shallow (0 to 2 feet bgs) Soil
Cornell-Dubilier Electronics Superfund Site
Facility Soils and Buildings RI Report

DWN.: LEN	DATE: 05/29/01	PROJECT NO.: 1945.1018	
CHKD: JG	REV.: 1		
DES.: LEN	APPD: LH	FIGURE NO.: 4-23	

R2-0000271



FOSTER WHEELER ENVIRONMENTAL CORPORATION

TITLE:
Horizontal Extent of Total PCB Contamination in Subsurface (2 to 6 feet bgs) Soil
Cornell-Dubilier Electronics Superfund Site
Facility Soils and Buildings RI Report

DWN.: LEN	DATE: 07/24/01	PROJECT NO.: 1945.1018	
CHKD: JG	REV.: 1	FIGURE NO.: 4-27	
DES.: LEN	APPD: LH		

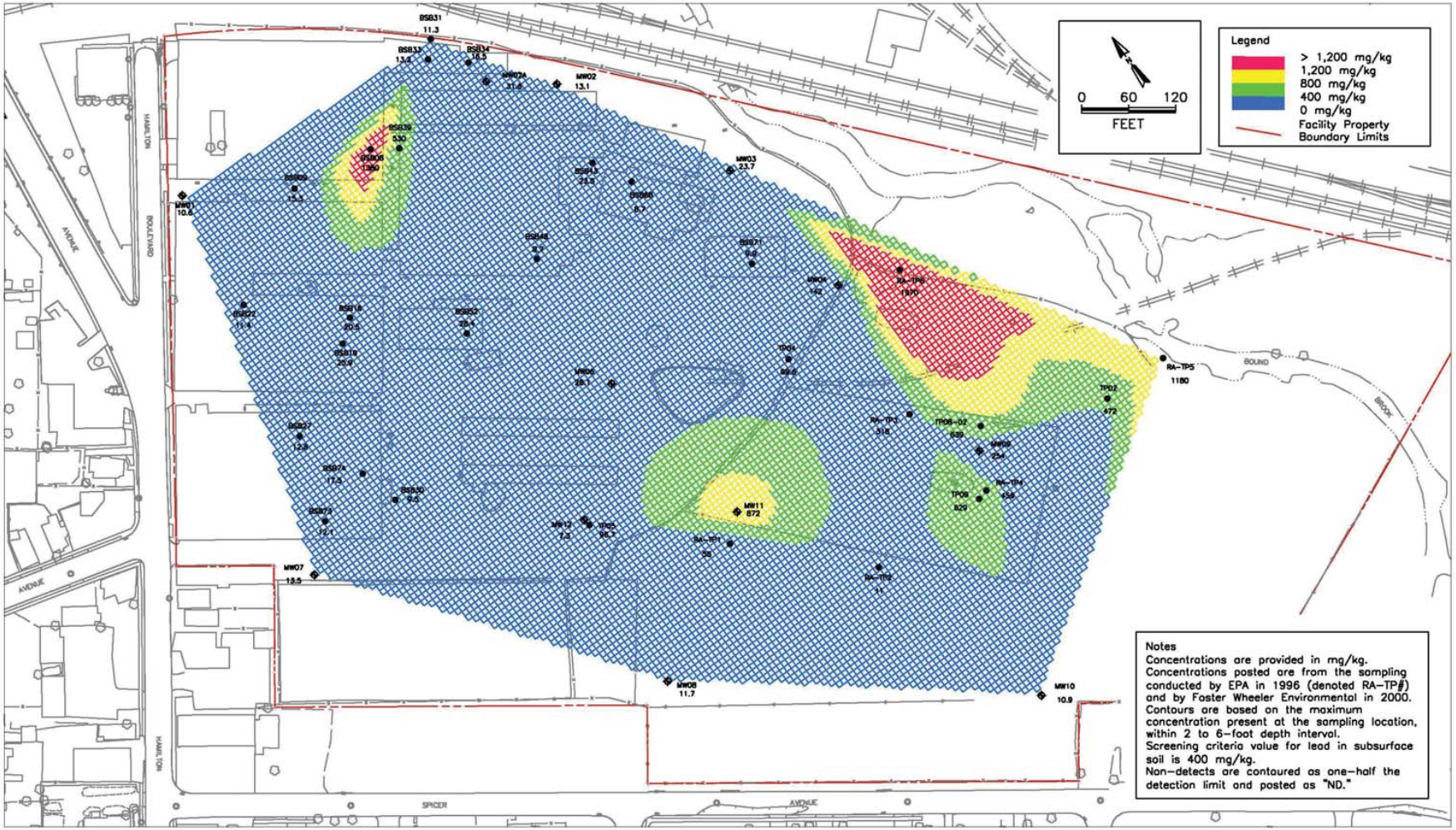
R2-0000272

FOSTER WHEELER ENVIRONMENTAL CORPORATION

TITLE:
Horizontal Extent of Total PCB Contamination in Subsurface (6 to 14 feet bgs) Soil
Cornell-Dubilier Electronics Superfund Site
Facility Soils and Buildings RI Report

DWN.: LEN	DATE: 07/24/01	PROJECT NO.: 1945.1018	
CHKD: JG	REV.: 1	FIGURE NO.: 4-28	
DES.: LEN	APPD: LH		

R2-0000273



FOSTER WHEELER ENVIRONMENTAL CORPORATION

TITLE:
Horizontal Extent of Lead Contamination in Subsurface (2 to 6 feet bgs) Soil
Cornell-Dubilier Electronics Superfund Site
Facility Soils and Buildings RI Report

DWN.: LEN	DATE: 08/02/01	PROJECT NO.: 1945.1018	
CHKD: JG	REV.: 0	FIGURE NO.: 4-45	
DES.: LEN	APPD: LH		

R2-0000274

ATTACHMENT C

Health and Safety Information for OU-3

Accident Prevention Program Administration Plan
Section 3.0: Project Organization and Responsibility for OU-3
Section 4.0: Potential Health and Safety Hazards and Controls for OU-3
Section 5.0: Personal Protective Equipment for OU-3
Section 8.0: Hazardous Material Monitoring for OU-3

CORNELL-DUBILIER ELECTRONICS SUPERFUND SITE
FINAL SITE-WIDE SITE SAFETY AND HEALTH PLAN
FOR ALL OPERABLE UNITS (OU-1 THROUGH OU-4)
ATTACHMENT C
HEALTH AND SAFETY INFORMATION FOR OU-3

TABLE OF CONTENTS

FIGURES

TABLES

ACCIDENT PREVENTION PROGRAM
ADMINISTRATIVE PLAN
OPERABLE UNIT THREE (OU-3)
(EM385-1-1 (Nov 03) Pages 3, 4 & App A)

1. Contractor	**2. Contract Name & No.**		**3. Date**
Malcolm Pirnie, Inc.	Cornell-Dubilier Electronics Superfund Site, W912DQ-06-D-0006		October 28, 2008
4. Project Manager Dan St. Germain (Technical) Ed Dudek (Administrative)	**5. Shift/day** One	**5a. Hours/shift** Ten hours per shift	**5b. Maximum employees/shift** N/A

5c. Describe major scope of work and location

The OU-3 activities will include groundwater monitoring well installation and sampling. Tasks associated with this scope will likely include bedrock coring, the installation of the FLUTe™ liners in groundwater wells, and groundwater sampling. The location of field activities associated with the groundwater investigation will be within and proximate to the boundaries of the CDE facility.

6a. Training - List subjects to be discussed with employees in safety indoctrination.

- Characteristics and potential hazards of contaminants known to be present at the site.
- Personal protective clothing: function, donning/doffing.
- Personal hygiene.
- Location of available restrooms.
- Decontamination procedures.
- General safety concepts.
- Signs and symptoms of over exposure to site-specific chemical hazards.
- Meeting areas in case of emergency.
  Approved routes to and egress from the work areas
- -Temperature stress.
- -Emergency action plan.
- -Site contingency plans.
- -Emergency recognition and prevention.
- -Hazard communication.
- -Location of the HASP in Work Area with Directions to the Hospital Clearly Marked.

6b. Training - List mandatory training and certifications that are applicable to this project (e.g. explosive actuated tools, confined space entry, crane operator, diver, vehicle operator, boat captains etc.

- 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) and 8-hour HAZWOPER Refresher
- 8-hour Hazardous Waste Operations and Emergency Response Supervisor training, 10-hour OSHA Construction Safety training, Supervisor training, and CRP/FA/BBP training (PSO only)

6c. List major equipment i.e. cranes, dozers, vessels etc.

The equipment required to complete tasks detailed in Section 5c includes but is not limited to: an air-rotary drill rig and associated tender rig, a Geoprobe drill rig, and a development rig (utilized after well installation or to clear obstructions or sediment collection at the well bottom).

6d. List special equipment i.e. radioactive equipment (Moisture Density Gage) etc.

Special equipment to be utilized during the OU-3 scope of work includes but is not limited to a photo-ionization detector (PID), flame-ionization detector (FID), multi-gas meter, global positioning system (GPS), and down-hole logging equipment (ATV/OTV/electrical resistivity).

7. Responsibility & Authority - Who is responsible for safety?

Project Safety Officer:	**Corporate Health and Safety Manager:**	**Field Team Leader:**	**Line of Authority?**
Dawn Post	Charles Myers, CHMM, CIH, CIPS, CPEA	Allan Wood, CPG	Dawn Post

8. Who will conduct safety inspection?	**8a. How?**	**8b. When?**
Dawn Post/Charles Myers	Site visits will be conducted by the PSO and the CHSM	PSO – Monthly CHSM – Random (approx. twice/year)
9a. Is safety & health policy attached?	**9b. Is safety program attached?**	**9c. Day & hour weekly safety meeting to be held:**
Yes. Detailed in the Site-Wide Site Safety and Health Plan for All Operable Units (OU-1 through OU-4)	Yes. Appendix A of the Site-Wide Site Safety and Health Plan for All Operable Units (OU-1 through OU-4)	Once per day prior to work start

10. How will subcontractor & supplies be controlled?	**11. What are their safety responsibilities?**
Malcolm Pirnie will monitor each subcontractor's compliance with the requirements of USACE's Safety and Health Requirements Manual, EM 385-1-1, this SSHP, and all applicable federal, state, and local regulations.	Subcontractors are responsible for their employees' health and safety, PPE, and providing required training, medical clearances, and compliance with the provisions of their SSHP documentation for all employees on-site.

ACCIDENT PREVENTION PROGRAM
ADMINISTRATIVE PLAN
OPERABLE UNIT THREE (OU-3)
(EM385-1-1 (Nov 03) Pages 3,4 & App A)

12. Who will report accidents, exposure data?
Field Team Leader, PSO, and/or CHSM

13. Medical Support – Outline on-site medical support and off-site medical arrangements:
On-site medical support: The PSO is the primary authority for directing operations at the Site under emergency conditions. The PSO will have 8-hour Hazardous Waste Operations and Emergency Response Supervisor training, 10-hour OSHA Construction Safety training, Supervisor training, and CRP/FA/BBP training. Emergency equipment such as fire extinguishers, first aid kit, and eye wash will be kept on-site near to the work area.

Off-site medical arrangements: The two hospitals located in the vicinity of the Cornell-Dubilier site are the JFK Medical Center in Edison, NJ and the Muhlenberg Medical Center in Plainfield, NJ. Site maps are included in the SSHP.

14. Outline procedures for conducting hazard assessments & written certification of PPE.	**Who?**	**When?**	**How?**
Review proposed work tasks.	PSO	Prior to conducting site work.	Review of proposed work scope
Assess potential hazards associated with work area.	Field Team Leader/PSO	Prior to conducting site work.	Review of Attachment C (OU-3) of the Site-Wide Safety and Health Plan
Identify potential routes of entry and points of contact with hazards.	Field Team Leader/PSO	Prior to conducting site work.	Review of Attachment C (OU-3) of the Site-Wide Safety and Health Plan
Review airborne contaminant action levels (specified in the Safety Plan) relative to known hazards.	PSO	Prior to conducting site work.	Review of Attachment C (OU-3) of the Site-Wide Safety and Health Plan
Identify the appropriate PPE ensemble for project work activities.	PSO	Prior to conducting site work.	Review of Attachment C (OU-3) of the Site-Wide Safety and Health Plan
Regularly assess site hazards to determine if/when PPE ensemble modifications are appropriate.	Field Team Leader/PSO	Daily	Through awareness and continuous review of site activities throughout project duration

15. Names of first aid attendants having certificates	**Type of certificate & expiration date**	**Names of USCG licensed boat operators. Type licence & expiration date.**
Allan Wood	Adult First Aid and CPR	N/A
Dawn Post	Adult First Aid and CPR	
Charles Myers	Adult First Aid and CPR	
Janis Karn	Adult First Aid and CPR	
Doug Auld	Adult First Aid and CPR	

ACCIDENT PREVENTION PROGRAM
ADMINISTRATIVE PLAN
OPERABLE UNIT THREE (OU-3)
(EM385-1-1 (Nov 03) Pages 3,4 & App A)

Proposed layout of temporary buildings and facilities (including subcontractors) and traffic patterns including access roads, haul roads, R.R.s. utilities, etc.

Temporary construction trailers are located within a limited area on the southeastern portion of the former CDE facility. There are no permanent site buildings. There are no access or haul roads within the proposed project area (open site). Traffic flow into and out of the site is achieved via Spicer Avenue to Hamilton Avenue to the south of the former CDE facility. Access to groundwater monitoring wells located proximate to the former CDE facility will be made via local public roadways.

The **Malcolm Pirnie, Inc.** (Company) will pursue a positive program of training, inspections and hazard control throughout the term of this contract. **Charles Myers, CHMM, CIH, CIPS, CPEA** has responsibility and authority for enforcing them.

Contractor's Signature	October 28, 2008 Date	C.O.R. Signature and Date

MVN Form 385-43R
Nov 2003

Proponent: CEMVN-SS

R2-0000280

3.0 PROJECT ORGANIZATION AND RESPONSIBILITY FOR OU-3

Malcolm Pirnie personnel who have health and safety responsibility for OU-3 are summarized in Table C3-1, below.

Table C3-1: Malcolm Pirnie OU-3 Personnel

Project Role	Name	Contact Information
Administrative Project Manager	Ed Dudek, P.E.	W: (914) 641-2686
Technical Project Manager	Dan St. Germain, CPG	W: (201) 398-4381
Deputy Project Manager	Janis Karn	W: (201) 398-4336
Project Certified Industrial Hygienist	Charles Myers, CHMM, CIH, CIPS, CPEA	W: (914) 484-7151
Project Safety Officer	Dawn Post	W: (201) 398- 4432
Alternate Project Safety Officer	TBD	TBD
Field Team Leader	Allan Wood, CPG	W: (201) 398-4389
Alternate Field Team Leader	TBD	TBD

4.0 POTENTIAL HEALTH AND SAFETY HAZARDS AND CONTROLS FOR OU-3

4.1 ENVIRONMENTAL SAMPLING ACTIVITIES

The groundwater investigation at the Site will include bedrock coring, FLUTe™ liner installation, and groundwater sampling. The investigation will aid in identifying the nature and extent of contaminants in groundwater. A detailed description of sampling activities is outlined in the FSP (OU-3). This attachment includes the Task Hazard Analysis (Table C4-1) for groundwater sampling and investigation. General physical and biological hazards and monitoring/control methods are addressed in this section.

Table C4-1: Task Hazard Analysis

TASK	Groundwater investigation and sampling including: bedrock coring/drilling oversight, geophysical survey oversight, FLUTe™ liner installation, equipment decontamination, and well sampling
INHALATION HAZARDS	X
INGESTION/ DERMAL CONTACT	X
SLIPS AND FALLS	X
LIFTING HAZARDS	X
OVERHEAD HAZARD	X
HEAT/COLD STRESS	X

Table C4-1: Task Hazard Analysis (continued)

TASK/STEP	HAZARDS	CONTROLS
Groundwater investigation and sampling including: Bedrock coring/drilling oversight, geophysical survey oversight, FLUTe™ liner installation, equipment decontamination, and well sampling	Inhalation Hazards (VOCs, PCB/Particulates,)	Engineering controls including water sprays will be used as necessary during drilling to reduce dust generation. Use of PPE, including respirators or dust masks, may be required.
	Ingestion/Dermal Contact	Proper hygiene practices will be used. Use of PPE, including gloves, is required and discussed below. Be sure to take proper precautions by decontaminating work clothing and boots or by using Tyvek© garments.
	Slips and Falls	Leather safety boots with steel-toes to protect against sharp or heavy objects. Observe the buddy system. Practice good work area housekeeping (e.g., keep walkways clear of equipment).
	Lifting Hazards	Use proper lifting techniques (e.g., bend legs, not back). Use an individual limit of 40 pounds. Use more than one person to lift objects that are bulky/awkward. Lifting safety is described in Section 4.3.6 of this document.
	Sharp Objects	Use proper precautions when working with sharp objects or walking near sharp objects. Precautions include avoidance of sharp objects, observing objects in the walking path, use of PPE including leather safety boots with steel-toes.
	Heat Stress	Wear appropriate clothing. Shorter work shifts/frequent breaks during extreme weather conditions. Exposure monitoring and weather-related clothing for heat stress is described in Section 7.0 of the Site-wide SSHP..
	Cold Stress	Wear appropriate clothing. Shorter work shifts/frequent breaks during extreme weather conditions. Exposure monitoring and weather-related clothing for cold stress is described in Section 7.0 of the Site-wide SSHP..

4.2 CHEMICAL HAZARDS

4.2.1 Chemical Hazards for Groundwater

Table C4-2 lists OSHA Permissible Exposure Limits (PELs), American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs), Immediately Dangerous to Life or Health (IDLH) concentrations, routes of exposure, and physicochemical properties for these chemicals. Table C4-3 lists contaminants known to be present in Site groundwater and the known peak concentrations.

Table C4-2: PELs, TLVs and IDLHs

Constituent	PELs	TLVs	IDLH
Volatile Organics (VOCs)			
1,1,2- Trichloroethane	10 ppm	10 ppm	500 ppm
1,1-Dichloroethylene	N/A	5 ppm	3,000 ppm
1,2,4-Trichlorobenzene	N/A	5 ppm	N/A
Benzene	1 ppm	10 ppm	500 ppm
Chlorobenzene	75 ppm	10 ppm	1,000 ppm
cis-1,2-Dichloroethene	N/A	N/A	N/A
Tetrachloroethylene	100 ppm	25 ppm	150 ppm
Trans-1,2-Dichloroethene	N/A	N/A	N/A
Trichloroethylene	100 ppm	50 ppm	1,000 ppm
Vinyl chloride	1 ppm	N/A	N/A
Pesticides and PCBs			
1,2-Dibromo-3-chloropropane (DBCP)	0.001 ppm	N/A	N/A
Aldrin	0.25 $\mu g/m^3$	0.25 $\mu g/m^3$	0.25 $\mu g/m^3$
Aroclor 1232	1 $\mu g/m^3$	N/A	N/A
Aroclor 1248	0.5 $\mu g/m^3$	N/A	N/A
Aroclor 1254	0.5 $\mu g/m^3$	N/A	5 $\mu g/m^3$
Heptachlor	0.5 $\mu g/m^3$	0.5 $\mu g/m^3$	700 $\mu g/m^3$
Metals			
Aluminum	15 $\mu g/m^3$	10 $\mu g/m^3$	N/A
Arsenic	0.010 $\mu g/m^3$	0.01 $\mu g/m^3$	100 $\mu g/m^3$
Iron	10 $\mu g/m^3$	5 $\mu g/m^3$	None
Manganese	5 $\mu g/m^3$	0.2 $\mu g/m^3$	500 $\mu g/m^3$

Table C4-3: Groundwater Contaminants of Concern

Contaminant in OU-3 Groundwater	Highest Detected Concentration (ppb)
Volatile Organics (VOCs)	
1,1,2- Trichloroethane	24.2
1,1-Dichloroethylene	22.5
1,2,4-Trichlorobenzene	1200
Benzene	2.11
Chlorobenzene	68.3
cis-1,2-Dichloroethene	242000
Tetrachloroethylene	3420
Trans-1,2-Dichloroethene	140
Trichloroethylene	186000
Vinyl chloride	270
Pesticides and PCBs	
1,2-Dibromo-3-chloropropane (DBCP)	1
Aldrin	1.3
Aroclor 1232	80
Aroclor 1248	2300
Aroclor 1254	5100
Heptachlor	0.13
Metals	
Aluminum	747
Arsenic	5.6
Iron	1210
Manganese	2570

4.2.2 *Chemical Hazards for Soils*

While the OU-3 activities are associated with the sampling and analysis of Site groundwater, personnel performing well installation and well installation oversight on the OU-2 portion of the Site may be exposed to contaminants present in the soils in that area. Table C4-4 lists OSHA PELs, the ACGIH TLVs), and IDLH concentrations, routes of exposure, and physicochemical properties for these chemicals. Table C4-5 lists contaminants known to be present at the Cornell-Dubilier Superfund Site and the known peak concentrations in Site soils.

Table C4-4: PELs, TLVs and IDLHs for OU-2 Soils

CONSTITUENT	PELs	TLVs	IDLH
Aldrin	0.25 mg/m³	0.25 mg/m³	25 mg/m3
Arsenic	0.5 mg/m³	10 µg/m³	NA
Barium	0.5 mg/m³	0.5 mg/m³	50 mg/m³
Cadmium	10 µg/m³	5 µg/m³	9 mg/m³
Chromium	0.5 mg/m³	0.5 mg/m³	NA
Copper (dust)	1 mg/m³	1 mg/m³	100 mg/m³
4, 4'-DDT	1 mg/m³	1 mg/m³	500 mg/m3
Dieldrin	0.25 mg/m³	0.25 mg/m³	25 mg/m3
Lead	50 µg/m³	50 µg/m³	100 mg/m³
Mercury	C 0.1 mg/m³	25 µg/m³	10 mg/m³
Nickel	1 mg/m³	1.5 mg/m³	10 mg/m³
PCB's 42%	1 mg/m³	1 mg/m³	5 mg/m³
PCB's 54%	0.5 mg/m³	0.5 mg/m³	5 mg/m³
Selenium	0.2 mg/m³	0.2 mg/m³	1 mg/m³
Silver	0.01 mg/m³	0.1 mg/m³	10 mg/m³
Silica	50 µg/m³	10 mg/m³/%Q+2	50 mg/m³
Trichloroethylene	100 mg/m³	54 mg/m³	1,000 ppm
Tetrachloroethylene	170 mg/m³	100 mg/m³	150 ppm
Total Dust	10 mg/m³	15 mg/m³	NA

Table C4-5: Contaminants of Concern – OU-2 Soil Concentrations

Contaminant in OU-2 Soils	Highest Detected Concentration
Aldrin	1,100 ppm
Arsenic	1,060 ppm
Barium	10,000 ppm
Cadmium	428 ppm
Chromium	408 ppm
Copper	57,600 ppm
4, 4'-DDT	25,000 ppm
Dieldrin	11,000 ppm
Lead	66,600 ppm
Mercury	24.4 ppm
Nickel	545 ppm
Total PCBs	130 ppm
Selenium	9.8 ppm
Silver	85.9 ppm
Trichloroethylene	47 ppm
Tetrachloroethylene	6.6 ppm

4.3 PHYSICAL HAZARDS

All field activities that will occur at the OU-3 properties are outlined in the Draft Technical Memo (Malcolm Pirnie, 2008). The following subsections discuss physical hazards that may be encountered during field activities, and control measures with which to minimize the potential for an incident.

4.3.1 Heat Stress

Exposure monitoring and actions required for heat stress are described in Section 7.0 of the Site-wide SSHP.

4.3.2 Cold Stress

Exposure monitoring and required actions for cold stress are described in Section 7.0 of the Site-wide SSHP.

4.3.3 Noise Hazards

Malcolm Pirnie requires the use of hearing protection by all employees when noise levels exceed 85 decibels. Hearing protection will be used which yields a Noise Reduction Rating (NRR) that reduces the noise level to below 80 dBA when placed in the ear canal.

4.3.4 Slip, Trip, and Fall Hazards

4.3.4.1 Hazards

Irregularities in the surface conditions at OU-3 properties may pose a slip, trip, or fall, hazards to workers. Trip hazards at residential properties include uneven ground in property yards, in-ground sprinkler systems, children's toys, and obstructions in walkways. There are potential hazards from the presence of wet areas, puddles, icy areas, or snowy areas that may be within walkways or open spaces.

Within OU-3 property buildings, waxed floors, unanchored rugs, and walkway obstructions pose potential slip, trip, and fall hazards to workers.

4.3.4.2 Control Measures

Slip, trip, and fall hazards must be controlled by exercising care and caution when working at the OU-3 properties. Good housekeeping practices must be maintained for work areas. Field personnel will be briefed by the PSO each morning on the location and type of obvious hazards in the work areas.

Personnel are to take care in areas where ground irregularities or low-lying obstacles exist and may not be observed due to vegetation. Such objects will be moved or flagged (if not movable) when observed. Workers are to take care within OU-3 where irregular or slippery surfaces and/or narrow walkways may pose potential slip, trip, and fall hazards. Field personnel will wear 6", over the ankle, steel-toed, chemically resistant leather work boots with a defined heel and traction soles to protect against sharp or heavy objects and to protect against uneven or slippery walkways.

4.3.5 Sanitation

Field activities will be conducted in accordance with the OSHA sanitation standard (29 CFR 1910.141). Office trailers maintained by Sevenson Environmental Services, Inc. located nearby at the CDE facility are equipped with sanitary toilet facilities and are accessible to the OU-3 sampling team. Field team members will be provided with an antibacterial gel (e.g. Purel) if potable water is not available at the toilet facilities.

4.3.6 Lifting Safety

4.3.6.1 Hazards

Lifting and moving of heavy or awkwardly-balanced objects may result in injury. Lifting and moving of sampling equipment may involve heavy or awkward items.

4.3.6.2 Control Measures

Using proper lifting techniques may prevent back strain or injury. The fundamentals of proper lifting include:

- Consider the size, shape, and weight of the object to be lifted. A mechanical lifting device (such as a winch) or additional persons must be used to lift an object if it cannot be lifted safely alone.
- The hands and the object should be free of dirt or grease that could prevent a firm grip.
- Gloves must be used, and the object inspected for metal slivers, jagged edges, burrs, or rough or slippery surfaces.
- Fingers must be kept away from points that could crush or pinch them, especially when putting an object down.
- Feet must be placed far enough apart for balance. The footing should be solid and the intended pathway should be clear.
- The load should be kept as low as possible, close to the body with the knees bent.
- To lift the load, grip firmly and lift with the legs, keeping the back as straight as possible.
- A worker should not carry a load that he or she cannot see around or over.
- When putting an object down, the stance and position are identical to that for lifting; the legs are bent at the knees, and the back is straight as the object is lowered.
- Malcolm Pirnie personnel should not lift drums that are not completely empty.

- The use of a hand auger can be strenuous for personnel not used to working with this tool. Stretching to loosen and warm up back and arm muscles should be completed by staff prior to using the auger.

4.3.7 Ladder Safety

4.3.7.1 Hazards

It is not anticipated that ladder use will be required for sampling activities at the OU-3 properties.

4.3.8 Overhead Hazards

It is not anticipated that overhead hazards will be encountered during sampling activities at the OU-3 properties.

4.4 Biological Hazards

Homeowner pets may be encountered during sampling activities. It is not anticipated that these animals will pose a hazard, but all should be kept at a distance to ensure that an unanticipated reaction does not result in injury. Field personnel may request that homeowners securely tie up or otherwise sequester all animals prior to entering the property.

Rats, feral dogs, and raccoons may pass through or inhabit parts of the nearby CDE facility. Rats and raccoons that are outside during daylight are to be avoided as the may be rabid. Feral dogs may travel in packs. Never turn your back and run. Face the animal, make as much noise as possible, and move slowly towards shelter or to a vehicle without breaking eye contact.

5.0 PERSONAL PROTECTIVE EQUIPMENT FOR OU-3

Based upon current information regarding the contaminants present at the Cornell-Dubilier Site and the Task Hazard Analysis of the tasks to be completed (see Table C4-1), the required levels of personal protection are provided below.

Table C5-1: Required Levels of Protection – OU-3

Study	Anticipated Level of PPE
Bedrock Coring/Drilling Oversight	Modified Level C – D; Level D
Geophysical Survey Oversight	Level D
FLUTe™ Liner Installation	Modified Level D
Well Sampling	Level D

8.0 HAZARDOUS MATERIAL MONITORING FOR OU-3

As a result of the hazard assessment on the tasks currently described in Section 4.0, exposure monitoring may be required by the PCIH for the following tasks performed:

- Groundwater well installation, which may include exposure to Lead, PCBs and other constituents of potential concern.

Table 8-1 is the Dust Exposure calculation made from the values in Table C4-5. The dust Action Level is calculated at 0.148 mg/m^3. Therefore, the following sampling plan will be instituted:

- Any invasive activity that may result in the accumulated dust becoming airborne will be monitored with a MIE Personal DataRAM using a Level C Action Level of 0.2 mg/m^3.

The use of PPE will be based on the following:

- When disturbing soil in OU-2 areas with relatively high concentrations of lead (depicted in Figures 4-23 and 4-45 as areas which are colored in yellow and red) Level C PPE will be used. If air sample results do not exceed the action level of 0.05 mg/m^3 values, the PPE level will be adjusted to modified Level D.

- Due to elevated concentrations of PCB in site soil in certain areas of the OU-2 portion of the Site (depicted in Figures 4-12, 4-27 and 4-28 as areas which are colored in red), Level C PPE will be used and air samples will be taken as described above. If air sample results do not exceed the OSHA PELs presented in Table 4-3 will result in a PPE downgrade to modified Level D.

- When disturbing soil in areas of the Town of South Plainfield, Level D PPE will be used. If air sample results exceed the action level, PPE will be upgraded to Level C.

Table C8-1: Dust Exposure Calculation Worksheet

Dust Level

Safety Factor for this site = 4

Chemical	Exposure Limit	Maximum Soil Concentration	Exposure Limit Based on Single Compound	Dust Quotient for Each Compound	Problem from Single Compound
	(mg/m3)	(mg/kg)	(EL Mix, mg/m3)	(level/limit)	[3 mg/m3) /EL mix]
Aldrin	0.25	1100	56.81818182	4400	0.0528
Arsenic	0.01	1060	2.358490566	106000	1.272
Barium	0.5	10000	12.5	20000	0.24
Cadmium	0.005	428	2.920560748	85600	1.0272
Chromium	0.5	408	306.372549	816	0.009792
Copper (dust)	1	57600	4.340277778	57600	0.6912
4,4'-DDT	1	25000	10	25000	0.3
Dieldrin	0.25	11000	5.681818182	44000	0.528
Lead	0.05	66600	0.187687688	1332000	15.984
Mercury	0.025	24.4	256.147541	976	0.011712
Nickel	1	545	458.7155963	545	0.00654
PCBs (Total)	0.5	130	961.5384615	260	0.00312
Selenium	0.2	9.8	5102.040816	49	0.000588
Silver	0.01	85.9	29.10360885	8590	0.10308
Trichloroethylene	54	47	287234.0426	0.87037037	1.04444E-05
Tetrachloroethylene	100	6.6	3787878.788	0.066	0.000000792
			Sum	1685836.936	
		Dust Exposure Level at Mixture PEL =	0.148294295		20.23004324

EQUATIONS USED IN THE CALCULATIONS FOR TABLE 8-1

Dust action level = (For one dust)

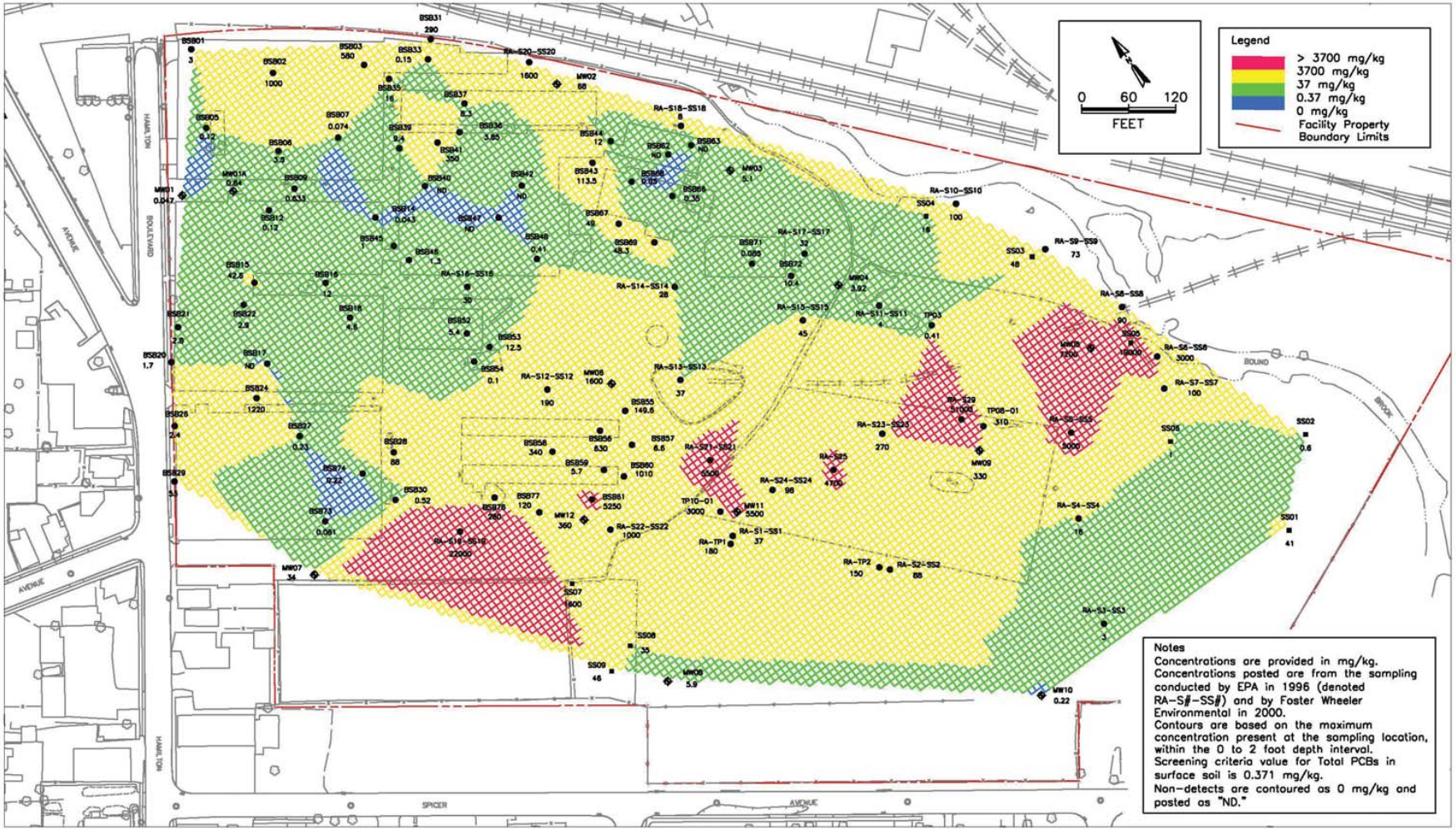
$$\frac{(1E+6)(\text{Exposure Limit mg/m3})}{(\text{Concentration mg/kg})(\text{Safety Factor})}$$

Dust action level = (For mixed dusts)

$$\frac{(1E+6) / (\text{Safety Factor})}{\text{Sum of } [(\text{Concentration mg/kg}) / (\text{Exposure Limit})]}$$

Due to the relatively high concentrations of lead in soil in certain areas of the OU-2 portion of the Site, a Lead Safety Program will be instituted and air monitoring will be conducted as described above.

FIGURES

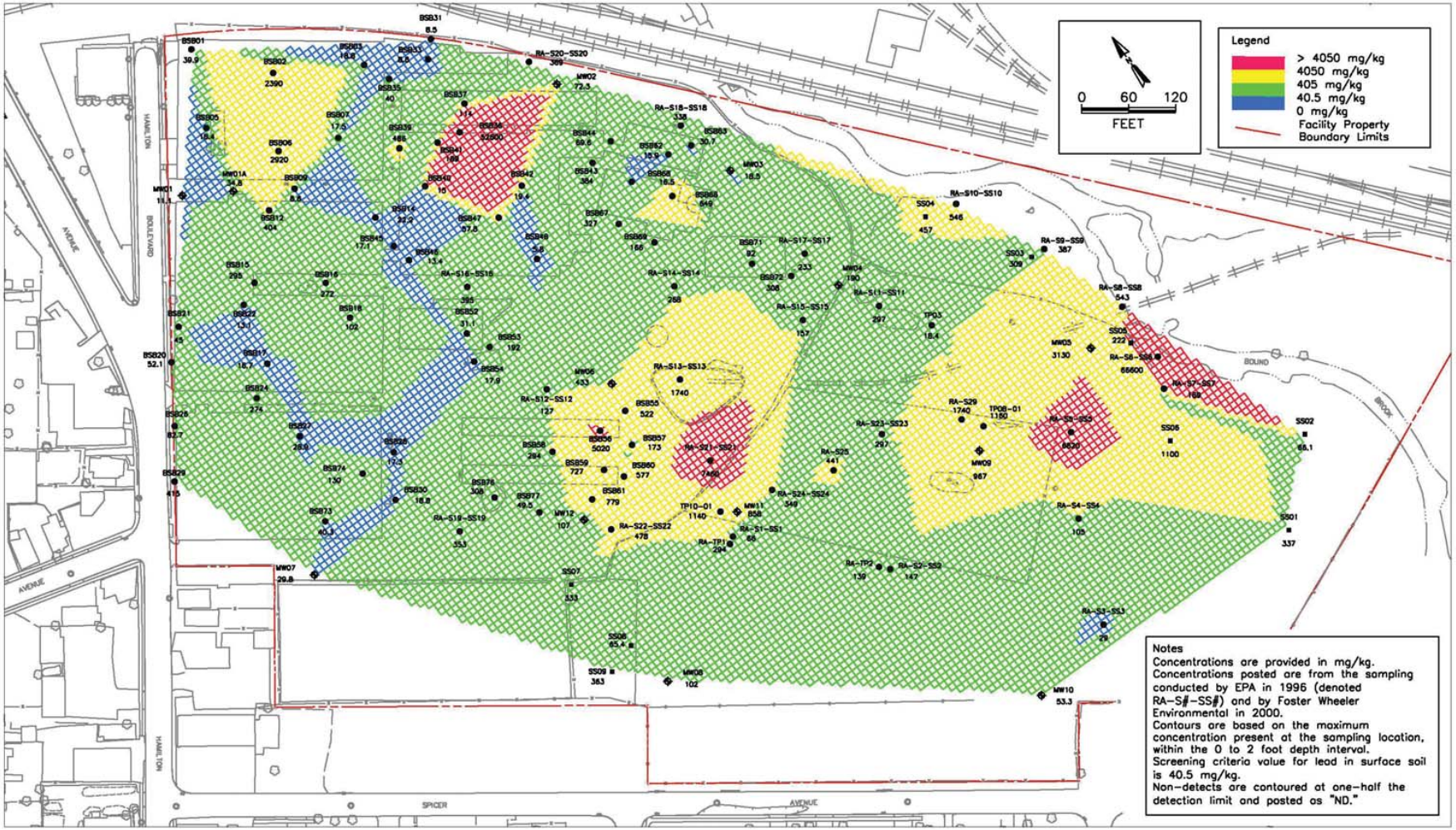


FOSTER WHEELER ENVIRONMENTAL CORPORATION

TITLE:
Horizontal Extent of Total PCB Contamination in Shallow (0 to 2 feet bgs) Soil
Cornell-Dubilier Electronics Superfund Site
Facility Soils and Buildings RI Report

DWN.: LEN	DATE: 05/25/01	PROJECT NO.: 1945.1018	
CHKD: JG	REV.: 1		
DES.: LEN	APPD: LH	FIGURE NO.: 4-12	

R2-0000295

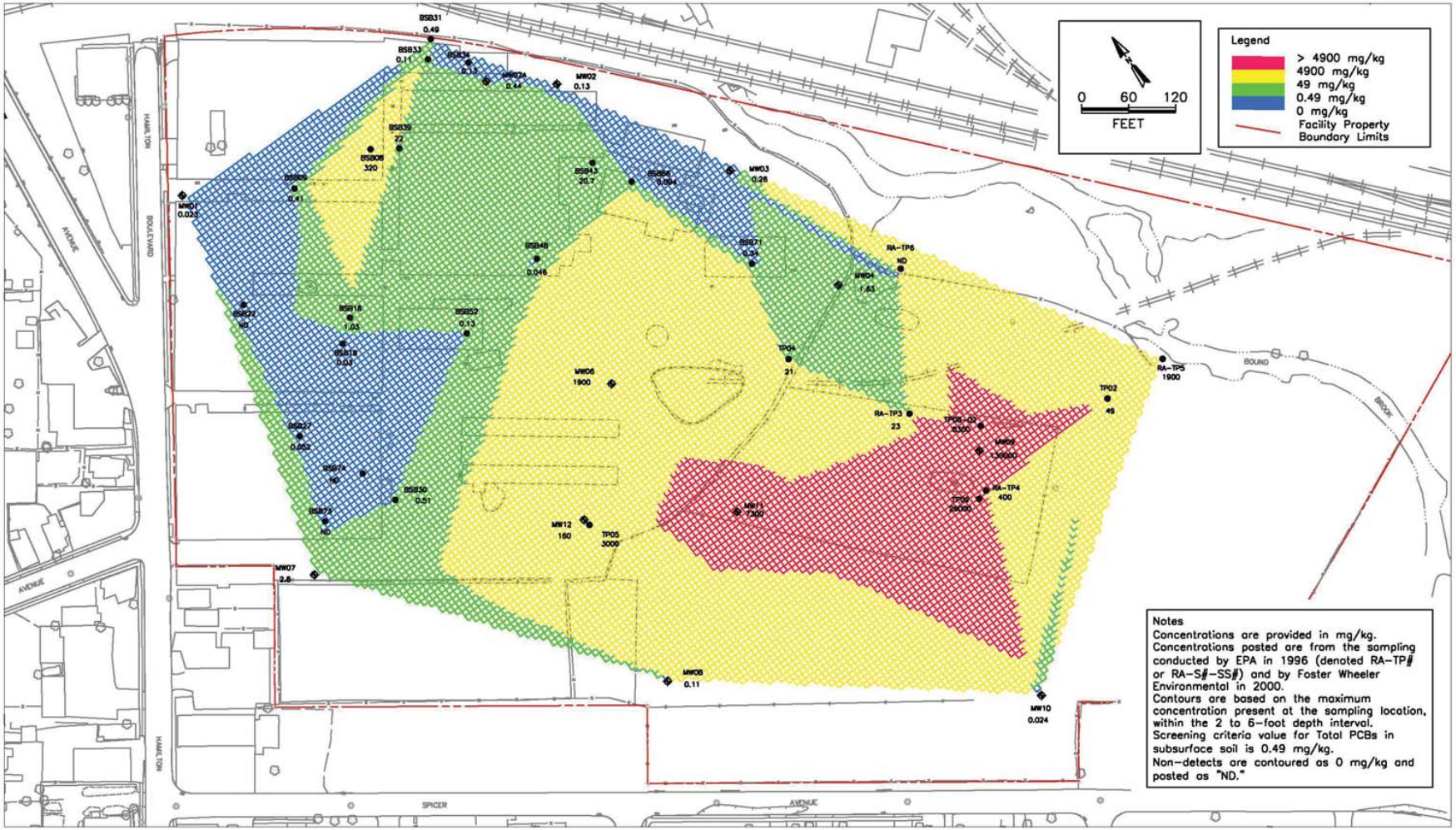


FOSTER WHEELER ENVIRONMENTAL CORPORATION

TITLE:
Horizontal Extent of Lead Contamination in Shallow (0 to 2 feet bgs) Soil
Cornell-Dubilier Electronics Superfund Site
Facility Soils and Buildings RI Report

DWN.: LEN	DATE: 05/29/01	PROJECT NO.: 1945.1018	
CHKD: JG	REV.: 1		
DES.: LEN	APPD: LH	FIGURE NO.: 4-23	

R2-0000296



FOSTER WHEELER ENVIRONMENTAL CORPORATION

TITLE:
Horizontal Extent of Total PCB Contamination in Subsurface (2 to 6 feet bgs) Soil
Cornell-Dubilier Electronics Superfund Site
Facility Soils and Buildings RI Report

DWN.: LEN	DATE: 07/24/01	PROJECT NO.: 1945.1018	
CHKD: JG	REV.: 1	FIGURE NO.: 4-27	
DES.: LEN	APPD: LH		

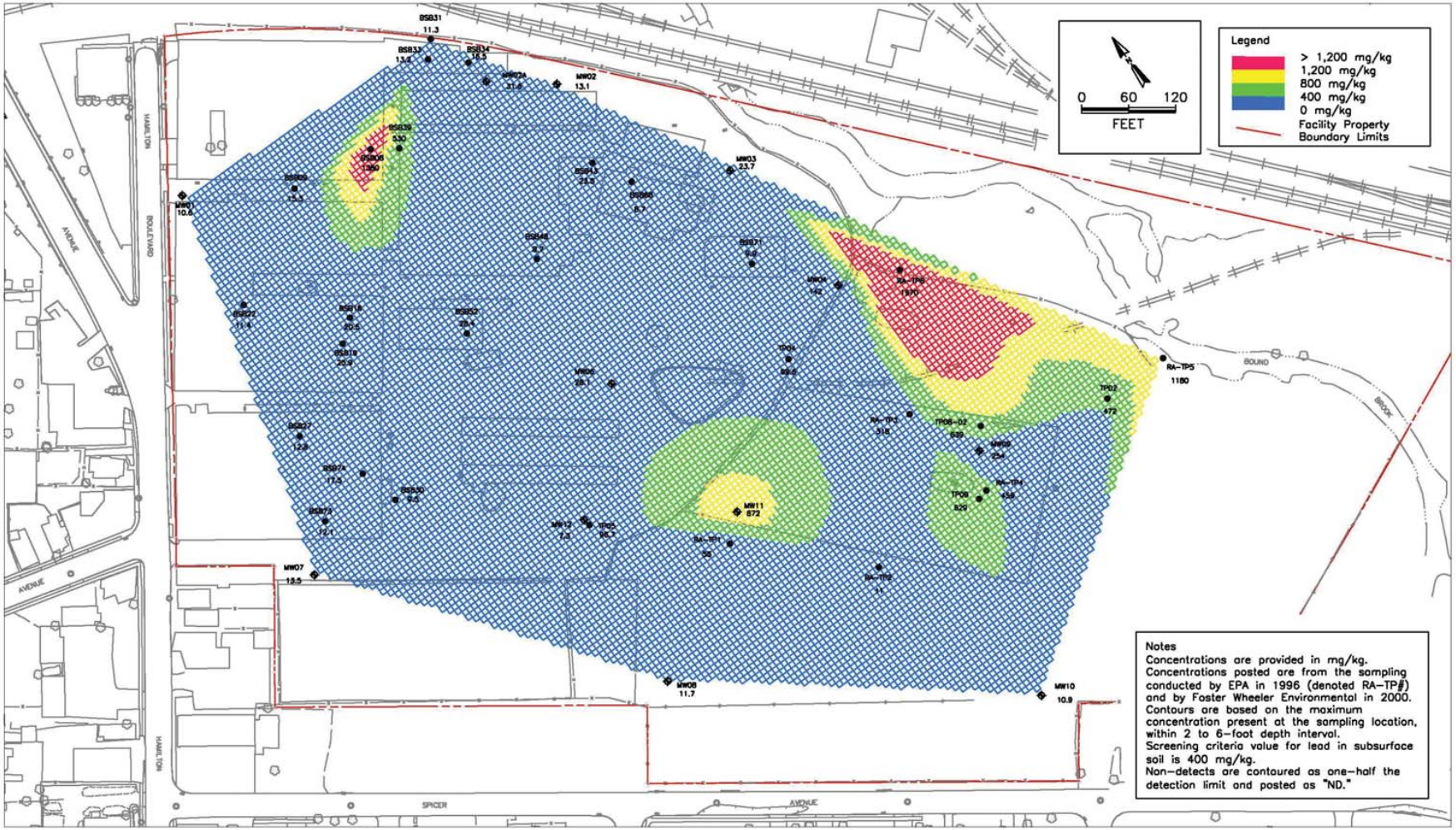
R2-0000297

FOSTER WHEELER ENVIRONMENTAL CORPORATION

TITLE:
Horizontal Extent of Total PCB Contamination in Subsurface (6 to 14 feet bgs) Soil
Cornell-Dubilier Electronics Superfund Site
Facility Soils and Buildings RI Report

DWN.: LEN	DATE: 07/24/01	PROJECT NO.: 1945.1018	
CHKD: JG	REV.: 1	FIGURE NO.: 4-28	
DES.: LEN	APPD: LH		

R2-0000298



FOSTER WHEELER ENVIRONMENTAL CORPORATION

TITLE:
Horizontal Extent of Lead Contamination in Subsurface (2 to 6 feet bgs) Soil
Cornell-Dubilier Electronics Superfund Site
Facility Soils and Buildings RI Report

DWN.: LEN	DATE: 08/02/01	PROJECT NO.: 1945.1018	
CHKD: JG	REV.: 0	FIGURE NO.: 4-45	
DES.: LEN	APPD: LH		

R2-0000299

ATTACHMENT D

Health and Safety Information for OU-4

[Note to Reviewer: This content will be added during the OU-4 planning phase.]